



1947  
WESTERN AUSTRALIA

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# REPORT

OF THE

# PUBLIC HEALTH DEPARTMENT

FOR THE YEARS

1944 AND 1945

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PERTH :

BY AUTHORITY : WILLIAM H. WYATT, GOVERNMENT PRINTER.

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# Report of the Public Health Department.

*The Hon. Minister of Public Health.*

I have the honour to submit herewith a report of the Public Health Department for the two years ending 31st December, 1945.

The report covers a period prior to my commencing duty as Commissioner, and I have therefore adhered to the form of presentation used by my predecessor.

Having no personal knowledge of the work performed in the various branches of the Department during the period under review, the reports furnished by the respective heads of these are appended without comment.

Dr. Everitt Atkinson retired on the 23rd April, 1944, after more than 33 years' service. Dr. C. L. Park was appointed as his successor and commenced duty on the 13th April, 1944, but resigned on the 20th December, 1944. No successor to Dr. Park had been appointed up to the 30th June, 1945, the duties of Commissioner of Public Health being performed by Dr. A. Neave Kingsbury, and those of Principal Medical Officer by Dr. Linley Henzell.

## FINANCIAL.

### STATEMENT OF REVENUE AND EXPENDITURE.

<i>Revenue.</i>										Calendar Year.			Calendar Year.		
										1944.			1945.		
										£	s.	d.	£	s.	d.
License Fees ...	...	...	...	...	...	...	...	...	...	35	5	0	103	18	0
Meat Inspection Fees	...	...	...	...	...	...	...	...	...	8,380	14	3	7,744	17	4
"Village Area" Sanitary Contracts	...	...	...	...	...	...	...	...	...	47	7	4	76	7	4
Pathological Laboratory	...	...	...	...	...	...	...	...	...	1,111	17	9	1,047	2	0
Sanitation Refunds	...	...	...	...	...	...	...	...	...	139	10	5	127	0	8
Inspection of Plans (Septic Tanks)	...	...	...	...	...	...	...	...	...	251	0	0	459	2	2
Miscellaneous ...	...	...	...	...	...	...	...	...	...	223	15	9	679	0	6
Nurses' and Midwives' Registration and Examination Fees	...	...	...	...	...	...	...	...	...	404	1	9	446	10	
Kalgoorlie Isolation Ward	...	...	...	...	...	...	...	...	...	1,571	10	0	...		
Local Health Authorities Recoups	...	...	...	...	...	...	...	...	...	994	5	6	826	17	1
Commonwealth Venereal Diseases Grant	...	...	...	...	...	...	...	...	...	2,000	0	0	...		
										£15,159	7	9	£11,510	15	8

  

<i>Expenditure.</i>										£			£		
										s.	d.		s.	d.	
Salaries	...	...	...	...	...	...	...	...	...	20,108	6	11	20,714	8	1
"Village Area" Sanitation	...	...	...	...	...	...	...	...	...	45	12	1	37	8	9
Payment, Local Health Authorities	...	...	...	...	...	...	...	...	...	9,034	0	6	3,601	10	7
School Hygiene	...	...	...	...	...	...	...	...	...	386	6	9	833	7	8
Travelling and Transport	...	...	...	...	...	...	...	...	...	998	11	8	632	8	5
Postages and Telephones	...	...	...	...	...	...	...	...	...	554	14	3	493	12	6
Laboratory	...	...	...	...	...	...	...	...	...	279	8	3	250	2	4
Venereal Diseases	...	...	...	...	...	...	...	...	...	4,638	6	6	354	3	7
Miscellaneous	...	...	...	...	...	...	...	...	...	519	4	0	1,847	16	5
Infant Welfare Centres	...	...	...	...	...	...	...	...	...	3,376	10	4	4,077	8	5
Maintenance and Transport of Lepers	...	...	...	...	...	...	...	...	...	7,008	7	3	7,550	5	11
Medical Officer and School Dentist—Travelling Allowances	...	...	...	...	...	...	...	...	...	972	13	5	572	0	8
Diphtheria Immunisation	...	...	...	...	...	...	...	...	...	695	10	9	601	1	5
										48,617	12	8	41,565	14	9
Sanitation of Government Buildings	...	...	...	...	...	...	...	...	...	9,956	11	2	9,742	6	9
										£58,574	3	10	£51,308	1	6

*Note.*—£4,000, Commonwealth Venereal Diseases Grant, previously credited to Revenue, now treated as from 1st July, 1945, as a credit to Expenditure Venereal Diseases.

The substantial fall in payments to Local Health Authorities in 1945, as compared to 1944, is apparent rather than real. The figure in 1944 is materially swollen by payment of arrears to Local Health Authorities and by charges raised in respect of the Infectious Diseases Branch, Kalgoorlie, which were not incurred in 1945.



VITAL STATISTICS.  
*Western Australia.*

									1943.	1944.	1945.
Mean Population—											
Males ... ..									250,197	252,508	254,762
Females ... ..									229,427	232,899	236,228
Total ... ..									479,624	485,407	490,990
Births—											
Males ... ..									5,357	5,544	5,400
Females ... ..									5,124	5,326	5,272
Total ... ..									10,481	10,870	10,672
Birth Rate—											
Per thousand of Mean Population ... ..									21·85	22·39	21·74
Deaths—											
Males ... ..									2,730	2,664	2,782
Females ... ..									1,857	1,814	1,930
Total ... ..									4,587	4,478	4,712
Death Rate—											
Per thousand of Population ... ..									9·56	9·23	9·60
Natural Increase—											
Rate per 1,000 of Mean Population ... ..									12·29	13·16	12·14
*Infantile Mortality per 1,000 Births—											
Metropolitan Area ... ..									29·66	29·27	25·33
Rest of State ... ..									36·22	36·49	34·51
Whole State ... ..									32·63	32·57	29·52
Still Births—											
Metropolitan Area ... ..									159	155	131
Whole State ... ..									278	274	224

\* Excluding Still Births.

BIRTH, DEATH, AND INFANT MORTALITY RATES AND NUMBER OF STILL BIRTHS, 1936-1945.

					Birth Rate.	Death Rate.	Infant Mortality (under 1 year).*			Still Births.	
							Whole State.	Metropolitan Area.	Rest of State.	Whole State.	Metropolitan Area.
1936	...	...	...	...	18·84	9·40	42·22	44·21	40·81	251	118
1937	...	...	...	...	18·95	8·95	37·52	42·40	33·96	241	103
1938	...	...	...	...	19·87	9·20	33·80	29·76	36·76	224	103
1939	...	...	...	...	19·41	9·31	40·84	37·98	42·97	213	97
1940	...	...	...	...	19·37	9·53	44·18	47·15	42·03	242	120
1941	...	...	...	...	21·35	10·07	35·28	35·21	35·34	257	119
1942	...	...	...	...	20·68	10·60	36·86	37·52	36·22	208	107
1943	...	...	...	...	21·85	9·56	32·63	29·66	36·22	278	159
1944	...	...	...	...	22·39	9·23	32·57	29·27	36·49	274	155
1945	...	...	...	...	21·74	9·60	29·52	25·33	34·51	224	131

\* Exclusive of Still Births.

COMPARISON OF INFANT MORTALITY AND GENERAL DEATH RATE.

				Infant Mortality.			General Death Rate.		
				1943.	1944.	1945.	1943.	1944.	1945.
New Zealand	...	...	...	31·37	30·12	27·99	10·04	9·87	10·12
Western Australia	...	...	...	32·63	32·57	29·52	9·56	9·23	9·60
New South Wales	...	...	...	36·18	30·68	30·63	10·16	9·28	*
Victoria	...	...	...	35·76	31·96	28·03	10·77	10·26	*
Queensland	...	...	...	37·79	31·32	29·72	10·06	8·81	*
Tasmania	...	...	...	40·56	38·27	27·48	10·43	10·16	*
South Australia	...	...	...	36·67	29·07	28·08	10·53	9·62	*

\* Not yet available.

Birth Rate.

The high birth rate of 1943 (21.85 per thousand) was exceeded in 1944, but that for 1945 showed a slight fall. This conforms to Commonwealth experience generally.

Infant Mortality.

The decline in infant mortality has been maintained, the post-war figure of 29.52 deaths per thousand of live births comparing with 40.84 in 1939. Improvement has been most marked in the metropolitan area with a fall from 37.98 in 1939 to 25.33 in 1945.

Stillbirths at 224 per thousand live births for the whole State in 1945 approximate the figures for the pre-war years (213 in 1939). Paradoxically stillbirths in the metropolitan area have not reverted to pre-war level—97 in 1939 and 131 in 1945. This suggests that the war-time pressure upon metropolitan practitioners may have led to a deterioration in the quality of individual attention, particularly in the pre-natal period.

Maternal Mortality.

Deaths from all causes in the puerperal state reached a record low figure in 1945—1.87 per thousand live births. Details are shown in the sub-joined table.

Year.	Live Births.	Deaths from :							
		Puerperal Septicaemia.		Abortion.		All other causes of the Puerperal State.		All causes of the Puerperal State.	
		No.	Rate per 1,000 Live Births.	No.	Rate per 1,000 Live Births.	No.	Rate per 1,000 Live Births.	No.	Rate per 1,000 Live Births.
1941 ... ..	10,118	1	0.10	7	0.69	16	1.58	24	2.37
1942 ... ..	9,901	4	0.40	8	0.81	16	1.62	28	2.83
1943 ... ..	10,481	3	0.29	3	0.29	17	1.62	23	2.19
1944 ... ..	10,870	4	0.37	5	0.46	18	1.66	27	2.48
1945 ... ..	10,672	2	0.19	5	0.47	13	1.22	20	1.87

INFECTIOUS DISEASES.

German Measles (Rubella or Rotheln) was added to the list of infectious diseases notifiable under the Health Act on the 30th April, 1945.

The table hereunder records the totals of notifications of infectious diseases received during 1944 and 1945. Notable features were:—

Typhoid Fever.

Notwithstanding the optimism expressed in the department's last report, Typhoid continues to exact a steady toll. Sanitary conditions in most health areas served by the conservancy system and unprovided with any satisfactory method of household wastes disposal are so bad that failure of Typhoid to appear in epidemic form in a number of foci must be attributed to some unidentified biological coincidence rather than to any effectual measure of control.

Diphtheria.

There has been a substantial fall in the prevalence of Diphtheria since 1943 (755). This decline must in great measure be attributed to the very satisfactory public response to the opportunities offered by local health authorities for prophylactic immunisa-

tion at free clinics. In 1944 11,146 children were immunised and in 1945, 8,396. A total of 84,541 children have been immunised in local health authority clinics since 1934.

Cerebro-Spinal Meningitis.

Decline in prevalence continued from the peak in 1941 (411), the figure for 1945 (29) being the lowest since the outbreak of war.

Brill's Disease.

Continued at a far higher figure than was approached before the war. The prevalence of this disease is a direct index of the facility with which disease carried by the rat flea can be carried to man under existing conditions of sanitation, and emphasises the very real risk of Bubonic Plague becoming epidemic should it be introduced from overseas. Local health authorities must learn to appreciate the importance of rodent control. Cases occurred at the ports of Albany and Geraldton but foci were predominantly in the metropolitan area.

Tuberculosis.

At 271 for the year 1945, Tuberculosis has attained the highest figure but one (273 in 1943) since 1936.

There is no  
diphtheria  
decrease  
  
but  
the  
1945 is  
down



Year.	Cases notified.	Deaths.	Deaths per 1,000 of Population.	Percentage of Total Deaths.
TUBERCULOSIS OF RESPIRATORY SYSTEM.				
1936	338	193	0.43	4.6
1937	239	172	0.38	4.23
1938	247	178	0.39	4.20
1939	202	179	0.38	4.13
1940	231	181	0.39	4.03
1941	154	185	0.39	3.87
1942	113	175	0.37	3.44
1943	273	144	0.30	3.14
1944	219	149	0.30	3.33
1945	271	163	0.30	3.45
OTHER FORMS OF TUBERCULOSIS.				
1936	4	16	0.036	0.38
1937	...	23	0.051	0.57
1938	...	12	0.026	0.28
1939	3	14	0.029	0.32
1940	...	15	0.032	0.33
1941	2	22	0.047	0.31
1942	17	17	0.036	0.34
1943	54	9	0.018	0.19
1944	7	15	0.030	0.31
1945	14	*	*	*

\* Figures not yet available.

INCIDENCE AND MORTALITY OF NOTIFIABLE INFECTIOUS DISEASES, 1944 and 1945.

		Cases Reported.		Deaths.	
		1944.	1945.	1944.	1945.
Undulant Fever	...	3	5	...	...
Malaria	...	63	23	...	...
Typhoid	...	25	24	1	...
Diphtheria	...	528	425	24	20
Scarlet Fever	...	290	99	1	...
Pulmonary T.B.	...	225	271	134	153
Other Tuberculosis	...	5	16	15	...
Typhus	...	99	77	5	...
Puerperal Fever	...	1	3	4	...
Leprosy	...	70	31	24	15
Dysentery	...	6	17	1	...
Poliomyelitis	...	5	6	...	...
Cerebro Spinal Meningitis	...	120	29	6	...
Lethargic Encephalitis	...	1	1	...	...

Deaths, 1945—Approximate figures shown where available.

Venereal Disease.

The total civilian figures for venereal disease in 1945 appear to compare quite favourably with those of the pre-war years, but it must be remembered that they do not include a large number of Service cases.

On the other hand Service cases summarised in the table include a large number of Allied troops and ratings not necessarily infected in this State. A disturbing factor is the increased prevalence of Syphilis—206 notifications in 1945, compared to 34 in 1938.

Disease.					1940.		1941.		1942.		1943.		1944.		1945.	
					M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Syphilis—																
Primary	...	...	...	...	16	4	8	3	35	7	23	7	39	12	43	25
Secondary	...	...	...	...	3	4	1	2	8	5	7	4	17	6	28	16
Tertiary	...	...	...	...	7	5	3	3	11	8	5	9	5	3	8	16
Congenital	...	...	...	...	...	1	12	...	2	2	1	2	2	...	4	...
Total, Syphilis	...	...	...	...	26	14	24	8	56	22	36	22	63	21	83	57
Gonorrhoea	...	...	...	...	462	128	288	123	248	252	257	308	201	213	254	199
Chancroid	...	...	...	...	5	...	6	...	2	...	7	...	7	...	7	...
Granuloma	...	...	...	...	...	1	...	1	7	1	...	...	...	2	...	1
Total	...	...	...	...	493	143	318	132	313	275	300	330	271	236	344	257
Grand Total	...	...	...	...	636		450		588		630		507		601	

VENEREAL DISEASE IN WESTERN AUSTRALIA (CIVILIAN).

Cases Treated at Clinics and by Private Practitioners.

							Children's Hospital.	Perth Hospital.	Fremantle Hospital.	Private Practitioners and Country Hospitals.
1944	...	...	...	...	...	...	9	228	36	234
1945	...	...	...	...	...	...	18	320	62	201

# VENEREAL DISEASE IN WESTERN AUSTRALIA.

*Allied and Australian Services.*

1944-45.

Disease.	1944.		1945. (Jan.-Sept.)		1945. (Oct.-Dec.)	
	M.	F.	M.	F.	M.	F.
Syphilis—						
Primary ... ..	21	...	48	...	3	...
Secondary ... ..	5	1	5	1	4	...
Tertiary ... ..	2	1	2	...	1	...
Congenital ... ..	6	...	2	...	...	...
Total, Syphilis ... ..	34	2	57	1	8	...
Gonorrhoea ... ..	578	10	404	...	34	...
Chancroid ... ..	2	...	25	...	23	...
Granuloma ... ..	1	...	...	...	...	...
Total ... ..	615	12	486	1	65	...
Grand Total ... ..	627		487		65	

*N.B.*—Figures shown above for 1944 and 1945 (Jan.-Sept.) were supplied by the Allied Services Hygiene Board, and refer to all forces, Allied and Australian, in W.A. The Board ceased to function as from 21st September, 1945. Figures for 1945 (October-December) refer to Australian forces only.

## INSPECTING MATRON.

An Inspecting Matron was appointed and commenced duty in July, 1945. Her duties include the inspection and classification of private hospitals, convalescent homes and rest homes, with a view to determining their suitability for licensing as private hospitals under the Health Act. Up to the 31st December, 1945, 40 inspections had been made of institutions applying for registration as convalescent hospitals and as a result of her recommendations only nine of these were subsequently registered as "C"

class hospitals, the remainder coming under local health authorities for registration as boarding houses.

All Government controlled and subsidised hospitals are also inspected by this matron, who makes recommendations for structural, equipment, and administrative improvements calculated to increase efficiency. Her duties at head office include the general supervision of the training, discipline, and transfers of nursing staff.

C. E. COOK, M.D., Ch.M., D.P.H., D.T.M. & H.,  
Commissioner of Public Health.

## REPORT FROM THE DIRECTOR, TUBERCULOSIS BRANCH, PUBLIC HEALTH DEPARTMENT, AND MEDICAL SUPERINTENDENT, STATE SANATORIUM, WOOROLOO, FOR THE YEARS 1944 AND 1945.

*The Commissioner of Public Health.*

### GENERAL.

The end of the war has brought us face to face with many problems, and in public health work that of tuberculosis control occupies a high priority. In submitting my report for the years 1944-45 the opportunity has been taken to present, in addition to routine activities, a brief survey of what is being done now, and recommendations of what is considered necessary to be done.

Tuberculosis is an infectious disease caused by the tubercle bacillus. In man it manifests itself by producing disease of the lungs, pulmonary tuberculosis (also known as "consumption" or "phthisis") and of other parts of the body (bones and joints, glands in the neck, abdomen and intestines, kidneys and genital organs and meninges of the brain). In the case of disease in the lungs, over 99 per cent. of cases in this country are caused by the inhalation of the sputum of an infected person; therefore, the infection is spread by personal contact, particularly in the home, but also in office, workshop, factory, mine or

hospital. In less than 1 per cent. of the pulmonary cases, and in approximately 50 per cent. of cases of disease in other parts of the body, it is estimated that the infection is caused by drinking the raw milk of an infected cow.

*Death rate.*—In this State about 173 deaths are caused every year by tuberculosis (average for the years 1941-45), the death rate being 35 per 100,000.

*Incidence of disease in the general population.*—It has been estimated that there are approximately eleven (11) cases of pulmonary tuberculosis in active form requiring treatment in existence at any one time for each annual death. On this estimation there could be  $11 \times 173 = 1,903$  active cases requiring treatment in W.A. today.

Within recent years, the mass radiography employed on recruits for the fighting forces in all belligerent countries has revealed that one person in every 300 of military age (18-45 years) has been found to have active pulmonary tuberculosis. This age group represents about four-sevenths of the total



population :  $4/7 \times 490,000 = 280,000$ ; 0.33 per cent. of  $280,000 = 933$ . If the previous figure of total cases is correct, approximately an equal number of cases exists in the balance of the population (of age groups 0-15 years and above 45 years).

*The persistence and spread of infection* in the population is therefore caused by approximately 1,900 cases in the State, of whom only 300 are being treated in hospital, and therefore isolated, at any one time. (Wooroloo 230, Edward Millen Home 45, Perth and other hospitals 25.) That is to say, there is a constant reservoir of infection caused by the presence of the other 1,600 cases in the general population, of whom it may be estimated that the great majority are infectious.

*The economic loss to the community is considerable.* It has been calculated that a human life was worth approximately £2,000 before the war. Without allowing for increased earning capacity in post war years, the annual loss of *real* wealth to the State in its most valuable form, human life, may be put at  $173 \times 2,000 = £346,000$ . To this must be added the loss of earning capacity, partial and total, of the surviving sufferers from the disease. If it is assumed that only 500 are basic wage earners, the loss may be estimated at  $£500 \times 250 = £125,000$  annually. The cost of treating cases in hospital may be estimated at say £60,000. These three estimates produce a total of £531,000 annually.

The loss of morale and suffering, the "hope deferred that maketh the heart sick," and the injury to the human spirit, cannot be measured in money, but to those who work and live with the disease they are incalculable. Tuberculosis has well been termed "one of the captains of the men of death," and it is impossible to view its ravages with complacency.

It is notorious that persons suffering from the disease will not present themselves for treatment in its early stages, because they know that they will be told to stop work and receive treatment. This immediate loss of earning capacity is more than they can face, and they therefore continue at work until they are no longer fit to do so. Their disease is then so far advanced that prospects of healing it are almost hopeless. Over one half of the cases admitted to the sanatorium are far advanced when first diagnosed. It cannot be too strongly emphasised that tuberculosis is a social and economic disease.

At the meeting of the National Health and Medical Research Council held in November, 1945, at Canberra, the eradication of tuberculosis was described as the most important problem in public health confronting the country today. With the end of the war, and while considering projects to be initiated for its control, it is well to have a stocktaking.

Perhaps nowhere in the field of medicine has such a revolution in technical methods occurred within the past 20 years as in the diagnosis and treatment of pulmonary tuberculosis. The stethoscope has been replaced by a powerful X-ray apparatus in diagnosis, and within recent years the use of mass X-ray surveys of the population has revealed an unsuspected extent of the disease. The old sanatorium has been replaced by a new hospital-sanatorium, and rest in

bed, although rigidly adhered to, and even used for more prolonged periods than formerly, is greatly aided by the pneumothorax needle, the thorascopes, the bronchoscope, the knife of the thoracic surgeon in thoracoplasties and other major operations and phrenic nerve operations.

More accurate and highly developed pathological and bacteriological methods have evolved, and a firm alliance has developed between the tuberculosis physician and radiologist and the thoracic surgeon. The physician's knowledge of pulmonary tuberculosis must of necessity be supplemented by a knowledge of both general medicine and diseases of the chest, and the sphere of the thoracic surgeon embraces the surgical treatment of pulmonary tuberculosis.

Projected measures for the treatment of the disease must therefore take into account this revolution in methods and place the tuberculosis and sanatorium physician in close contact with the thoracic surgeon, radiologist, anaesthetist and bacteriologist. This may be done in one of two ways—either by having the surgeon and other consultants visit the sanatorium-hospital regularly, or by building a major thoracic and tuberculosis unit in close relationship to the city hospital.

#### EXISTING METHODS IN WESTERN AUSTRALIA.

1. *Diagnosis, case-finding and "follow-up."*—The policy has been, and is, to wait for the patient to present himself to his doctor for treatment; that is, to wait till his symptoms are obvious and the disease is far advanced and probably incurable. Many years of experience in other countries have shown that the lack of an active case-finding programme, the failure to adopt a policy of "go and get him," must lead to failure in control. The progressive decline in the mortality in the past 30 years (by approximately 50 per cent.) has been due partly to isolation and treatment of individual patients in sanatoria, and partly to the improvement in economic and living and working conditions of the population.

One half of our population resides in the metropolitan area. With the exception of small islands of population at Kalgoorlie and Bunbury, the rest of our rural population has no access at all to any means of early diagnosis. In the metropolitan area itself, the clinic facilities are very poor.

The following are the details of existing arrangements:—

*Royal Perth Hospital.*—One diagnostic and follow-up clinic is held in the Outpatient Department on Wednesday mornings by myself (until recently with the assistance of the late Dr. Muecke). Over 50 cases may attend; even with Dr. Muecke's help the volume of work was very heavy. Now it is almost impossible, although some relief is obtained by the attendance of a Medical Registrar, whose experience in tuberculosis is, however, necessarily limited. Dr. Muecke also held a small clinic on Saturday mornings, but this has had to be discontinued.

All work at the clinic must perforce be very hurried and there is time for only scant and cursory attention to the patients who may be left waiting for hours. Visits by patients to the clinic have to be spaced at long intervals, or they cannot be seen



at all, and no time at all exists for the clinical investigation of practically all "contacts."

In addition, I hold one or two clinics every month at the hospital for repatriation cases.

*Fremantle Hospital.*—Dr. Dalla Torre visits the Fremantle Hospital twice monthly. I have no doubt that if efforts were made to increase attendances by the public, a weekly clinic could be held with advantage, for the population served would warrant it.

*Children's Hospital.*—No clinic is held as yet, but the Medical Superintendent (Dr. Edmonds) plans to make an early commencement.

*Country Areas.*—Clinics are held twice monthly at the Kalgoorlie Hospital (conducted by Dr. Webster) and once monthly at Bunbury Hospital (St. John of God), conducted by Dr. Lawson Smith.

When a new X-ray plant is installed at Geraldton Hospital it is proposed to commence a clinic there.

2. *Treatment.*—We have a sanatorium for 230 beds at Wooroloo, designed and built over 30 years ago. It is out of date and will need extensive reconditioning and re-equipping. The X-ray equipment is new and first-class. There are also 45 beds for chronic cases at the Edward Millen Home and about 25 cases are in the Royal Perth and other hospitals at any one time for surgical treatment. Experience within the past 20 years in other countries has proven that surgical methods can be very successful in individual cases, and in W.A. it is pleasing to report that everything possible is being done with the meagre and comparatively primitive means at our disposal.

There are no facilities for major surgery at the State Sanatorium at Wooroloo, but arrangements were made with the Royal Perth Hospital four years ago to transfer cases from the sanatorium to the hospital for major surgical measures. It is gratifying to record the active co-operation of the Royal Perth Hospital Board and of its late Medical Superintendent, the late Dr. Roy Muecke, and of its Honorary Medical Staff. Recent experience in this State has shown that with early and minimal disease, arrest and healing of the disease may be obtained in a high percentage of cases by surgical methods. Well over one half of the cases at Wooroloo Sanatorium have had, or are receiving, one or more of these various methods of treatment.

The medical staff of a modern sanatorium should consist of one whole-time medical officer per 50 patients, in addition to the Medical Superintendent. On this basis Wooroloo should have the following medical staff:—

- 1 Medical Superintendent.
- 1 Deputy Medical Superintendent.
- 2 Senior Resident Medical Officers (permanent appointments).
- 1 Bacteriologist (permanent appointment).
- 1 Junior Resident Medical Officer (short term appointment).

At present we have:—

- 1 Medical Superintendent.
- 2 Senior Resident Medical Officers (Dr. Greer and Dr. Guinan).
- 1 Junior Resident Medical Officer.

The consulting staff is as follows:—

- Consulting Thoracic Surgeon, Mr. F. J. Clark.
  - Consulting Physician, Dr. J. G. Hislop.
  - Consulting Anaesthetist, Dr. G. B. Troup.
  - Consulting Bacteriologist, Dr. A. Neave Kingsbury.
- The late Dr. Roy Muecke also held the position of Consulting Physician.

Arrangements have recently been made for these gentlemen to pay a monthly visit to the sanatorium to attend a conference of the whole staff on various selected patients.

3. *Rehabilitation.*—The aims of treatment are (a) to heal the disease and render the patient non-infectious, and so prevent further spread of the infection; and (b) to restore, if possible, his working capacity. This restoration of working capacity, or education of the patient to a new occupation more suited to his condition, should begin while his treatment is in progress, i.e., in the sanatorium. In other cases his disease may be so advanced that it is impossible to render him non-infectious or to restore fully his working capacity. For such a case it is inhuman and uneconomic to expect him to exist on an inadequate pension. It is surely in the interests of us all to provide him with that work of which he is capable, and thus restore his self-respect, enable him to at least partly earn his own living, and restore the products of his labour to the community.

The old practice of patching up patients in the sanatorium and then discharging them to fend for themselves with unsuitable work, or none at all, is a proven tragic failure and must be altered by every means in our power. To achieve these ends, an industrial colony was commenced at Wooroloo over three years ago, modelled on the lines of Papworth in England, and has made promising progress. It must be emphasised that re-education and rehabilitation must form an important integral part of any scheme for the control of tuberculosis, and must commence with the commencement of the patients' treatment.

A note should be made here that the powers of the State to compel a tuberculous person who is infectious to enter the sanatorium for the purpose of isolation are very limited. We can compel him to enter the sanatorium, but we cannot prevent him from walking out again within an hour, and so continuing to spread the disease in the community. This was proven last year when a certain case went to the courts. Our approach to the problem of venereal disease is realistic, no doubt because of its moral implications. It is interesting to note that compulsory measures for the isolation of tuberculous persons who are infectious are enforced with success in some 10 or 11 States of the U.S.A. and in Canada. Further, measures for the restraint of recalcitrant patients (alcoholic and other misconduct) in the sanatorium itself might well be considered again.

#### RECOMMENDATION OF FUTURE METHODS.

It has been pointed out in previous memoranda that a re-orientation of our policy is overdue. While it is not intended to minimise the absolute necessity of adequate treatment for every known tuberculous person, it follows from what has already been written that a serious approach to the problem of tuberculosis control needs an approach from a completely



different angle to that employed at present. All our attention should no longer be directed merely to the treatment of cases presenting themselves. The centre of gravity of our scheme should be shifted; we should no longer passively wait for the far advanced cases, but should actively seek and pursue all cases of active disease in the population by the proven means of mass radiography of the adult population, and so detect the early or minimal cases, provide them with every modern facility for treatment, and arrest their disease. By rendering them non-infectious we will prevent the spread of the disease to their contacts, and thus within a measurable period of time so eradicate the disease that it ceases to be endemic and becomes sporadic and occasional. We have the means at our disposal, but they require money. It has been truly said that the public health can be bought. We have bought the control of typhoid fever by spending money on good water supplies; we are controlling diphtheria by immunisation (if the public will allow us to do so); we can buy freedom from tuberculosis by the year 1965 by the following measures if they are pursued seriously and with vigour and if we are prepared to spend the necessary money:—

1. The commencing of an adequate case-finding and diagnostic programme, using mass radiography of the adult population.
2. The provision of complete measures for the hospitalisation, isolation and treatment of the cases so discovered.
3. The rehabilitation of these cases during and after treatment.

An illustration of the value of mass radiography has recently been afforded by the X-ray examination of all men and women discharged from the Army, Navy and Air Force in this State. The Deputy Director of Medical Services (Col. Le Souef) advises that, at the time of writing, of the 80 cases of pulmonary tuberculosis in Service personnel at present receiving treatment there are:—

1. Early or minimal disease—22 or 27.5%.  
Of these—discovered on reporting sick, nil;  
discovered on routine X-Ray, 22.
2. Moderately advanced disease—54 or 67.5%.  
Of these—discovered on reporting sick, 22;  
discovered on routine X-Ray, 32.
3. Far advanced disease—4 or 5%.  
Of these—discovered on reporting sick, 3;  
discovered on routine X-Ray, 1.

It has been found possible to collapse successfully by artificial pneumothorax 15 of the 22 early cases (the others being under observation, or collapse not necessary) or 68 per cent

Of the moderately advanced group, in the 22 whose symptoms led to their discovery, 10 or 45 per cent. have been successfully collapsed, compared with 20 out of 32, or 63 per cent. of those discovered by routine X-ray.

In all the four of the far advanced group collapse was considered inadvisable or impossible.

On comparison with an analysis of the patients in the Wooroloo Sanatorium, almost all of whom have been diagnosed because of symptoms which made them consult their doctor, it is found that only 4.5 per cent. have early disease, 47 per cent. have moderately advanced disease, and 48.5 per cent. have far advanced disease. It is tragic that all the moderately advanced and far advanced cases had at one time been early, and that our failure to provide the means of early diagnosis in the past has rendered their prospects of recovery either poor or hopeless.

It is also interesting to note that in the Service figures it has been possible to collapse the lungs of 63 per cent. of the moderately advanced cases who had not reported sick but who were discovered on routine X-rays, as compared with 45 per cent. of cases with a similar classification who had reported sick—another point in favour of periodic routine X-ray examination. It is also to be noted that Service cases had their chests X-rayed only on entering the Services and on discharge. There can be no doubt that a periodic X-ray examination would have placed the great majority of all the 80 cases in the “early” group instead of the 27.5 per cent. found on discharge.

1. *The commencing of an adequate case-finding and diagnostic programme, using mass-radiography of the adult population.*—The expansion of diagnostic clinics at the Royal Perth and Fremantle Hospitals and the establishment of one at the Children’s Hospital, these clinics to operate in conjunction with mass radiography units, two for the metropolitan area, situated at the Royal Perth and Fremantle Hospitals or nearby. This will be successful only if vigorous propaganda measures are adopted to get the public to attend. It is interesting to note that the initial steps have been taken to form in this State a branch of the National Association for the Prevention of Tuberculosis, with the object of stimulating public interest in the disease and the methods used in its control.

These clinics will require a considerable professional staff, medical and nursing, together with clerical personnel. It is estimated that two mass radiographic units could examine at least 600 persons weekly. Of these, perhaps, 2.5 per cent., i.e., 15 weekly, would require further investigation, some having to be admitted to hospital. If all the adult population could be persuaded to attend, a complete survey could be completed in perhaps six years, together with periodic re-examination. If 30,000 persons were examined in a year, approximately 90 cases of disease requiring treatment would be discovered annually. There would still be the continuous flow, as at present, of those cases presenting themselves because of obvious disease, although a proportion of these would be picked up by the routine survey. It should also be noted that if there were sufficient staff the rate of examination of the population would be accelerated, with higher weekly figures and an earlier completion of the survey. This would of course be highly desirable.

The installation of, say two mobile radiographic units for country areas, although confronted with obvious difficulties in their operation, would be expected to yield similar results.



It is proposed that complete measures for a case-finding programme as outlined be instituted within the next three years.

2. *The provision of complete measures for the hospitalisation, isolation and treatment of the cases so discovered.*—World-wide opinion favours a standard of the provision of three beds per annual death. On this basis W.A. should have 520 beds for its tuberculous patients, there having been, on an average, 173 deaths per year for the past five years.

At the present, 300 cases of the disease are being hospitalised at any one time, of whom 25 are in the Royal Perth and other hospitals. There is, therefore, a deficiency of 220 beds. This deficiency would be even greater if a rapid survey of the whole population were held and a large number of new cases diagnosed in a short period of time. It has therefore been recommended in previous memoranda that a 200-bed hospital sanatorium block should be erected to make good the deficiency; and that of these beds 80 would be for repatriation cases, provided that the Repatriation Commission continued its policy of combining with the State authorities in the treatment of their cases of tuberculosis. This block would be used for the admission of all new cases and for those requiring surgical treatment. All cases would be housed in the new block until they have completed their period of bed rest. This might average up to one year each. The present accommodation at Wooroloo would be used for convalescent cases after transfer from the hospital block on completion of bed rest. The total accommodation would then be well over 450 beds.

The question of the site for the new block raises various possibilities which are as follows:—

- (a) The erection of the new block at the Wooroloo Sanatorium, providing a complete unit there.
- (b) The erection of the new hospital block in Perth within easy reach of the Royal Perth Hospital, or at the hospital itself, as a division of the new hospital.
- (c) The use of present accommodation, or accommodation in the course of erection, at the Royal Perth Hospital for this purpose.
- (d) An extension of the thoracic or chest unit at the Royal Perth Hospital to, say 100 beds, together with a modified building programme at Wooroloo, the former to be used for doubtful cases for diagnosis and for the inauguration of treatment in "acute" cases, and also for the transfer of cases from Wooroloo for major surgery, as at present, and the latter, together with the present accommodation, for the routine "minor" surgical treatment (artificial pneumothorax, pneumoperitoneum, etc.) and for convalescent cases from the hospital thoracic unit. This proposal means in essence a continuation and expansion of the present arrangement with a heavier emphasis on the Royal Perth Hospital unit.

The first proposal (a) is contingent on the appointment of a Resident Surgeon to the sanatorium. It is the opinion of our Consulting Surgeon (Mr. F. J. Clark) and of Col. Le Souef who has recently returned from England, Scandinavia, the U.S.A. and Canada, that it will not be feasible to make such an appointment with an experienced man. The sanatorium surgeon must also be the thoracic surgeon of the Royal Perth Hospital, as he will be experienced in chest surgery as a whole. In other words, the major surgery of pulmonary tuberculosis is a branch of chest surgery generally and is performed more efficiently in the same clinic. Dr. Le Souef reports that there is an increasing tendency in American practice to perform all the major surgery of tuberculosis in the city hospital, and in fact, to erect the "acute" sanatorium either in or near the city hospital, because of difficulties of travel, facilities for the surgical staff, and the reluctance of the surgeon to be at a great distance during the post-operative care of his patients. These facts must be faced, and it is therefore now recommended that at least the major surgery be not performed at the sanatorium itself but at a city unit, either in or near the city hospital, and that the hospital thoracic unit activities be extended generally.

One of the great difficulties in our State with its small population is, therefore, to obtain a resident surgeon with adequate continuous surgical experience at the sanatorium, and for the city thoracic surgeon to obtain that experience of cases of tuberculosis generally which is so necessary if his opinion and practice are to have that confidence in the interpretation of the manifestations of the disease which is so necessary.

Another aspect must be pointed out. In previous memoranda the importance of the close collaboration between the sanatorium, clinic and general hospital medical staffs has been pointed out. "Watertight compartments" are particularly bad in medical practice, and in the past four years regular visits of the consulting staff to the sanatorium have been encouraged. Distance makes this difficult, and there can be no doubt that the arrangements (b) or (c) would completely overcome the difficulty. Further, the use of the services of a senior experienced resident staff of the hospital block or thoracic unit in the city area in the clinics and mass radiographic programme would overcome to a great degree the difficulties of obtaining for this purpose experienced and trained professional personnel, and would also probably cost less in salaries.

An expenditure of £250,000 on a hospital block cannot be lightly entered upon. It is promised that vigorous and whole-hearted measures will yield substantial results in 15 to 20 years' time. The sanatorium and hospital beds in the intervening years would be used less and less and, it is generally hoped, would become progressively redundant. If the new buildings were situated in close association with the Royal Perth Hospital they could, if suitably designed, be gradually utilised for other hospital purposes.

Recent experience in the difficulty of obtaining nursing and lay staff at the sanatorium are also significant. There can be no doubt that a city location would largely provide a solution. Further, a city,



unit offers greater ease for the visiting of friends and relatives of patients, particularly when they are ill and therefore in greater need of visiting.

Finally, the recent proposal to establish a medical school in Perth is an important point which must not be overlooked. Medicine and surgery of diseases of the chest (including tuberculosis) are of increasing importance, and the proximity of a city "chest hospital" to the medical school would be a great advantage.

There are, however, several points in favour of a hospital-sanatorium of over 400 beds at Wooroloo. These are—

- (1) Complete continuity of treatment is more easily attained.

- (2) Re-education and rehabilitation can be commenced when the patient is first admitted and there is no break when he is transferred from the city hospital to the sanatorium. Doubtless this objection could be partially overcome by the occupational therapist and rehabilitation officer visiting the city unit weekly.

- (3) Breaks in a prolonged period of treatment make patients restless. The sanatorium is regarded by them as their home for the time being, and rightly so.

To summarise :—	1.	2.	3.	4.
	Complete hospital-sanatorium at Wooroloo	Erection of new hospital block in Perth within easy reach of the Royal Perth Hospital or at the Hospital itself, as a division of the new hospital.	The use of present accommodation or accommodation in the course of erection at the Royal Perth Hospital for this purpose.	An extension of the thoracic of chest unit at the Royal Perth Hospital to say 100 beds, together with a modified building programme at Wooroloo.
Continuity of treatment ... ..	good ... ..	partial ... ..	partial ... ..	better than 2 and 3.
Access of surgeon and consultants to patients with added experience in tuberculosis	difficult—poor ...	good ... ..	perfect ... ..	perfect.
Avoidance of water-tight compartments in professional, personal, and general co-operation	difficult ... ..	easy ... ..	easy ... ..	easy.
Ease and expense of clinic staffing	more difficult—expensive	easier and cheaper	easier and cheaper	easier and cheaper.
Appointment of resident surgeon or surgical registrar	difficult ... ..	easy ... ..	easy ... ..	easy.
Re-education and rehabilitation ...	easy ... ..	more difficult—commenced later in patient's treatment	more difficult—commenced later in patient's treatment	more difficult—commenced later in patient's treatment.
Ease of visiting by patient's relatives	more difficult ...	easier ... ..	easier ... ..	easier.
Availability of new hospital buildings for future use	new buildings becoming progressively less used—uneconomic	new buildings progressively used for general hospital purposes as no longer used for tuberculosis treatment — more economic	new buildings progressively used for general hospital purposes as no longer used for tuberculosis treatment — more economic	new buildings progressively used for general hospital purposes as no longer used for tuberculosis treatment — more economic.
Ultimate cost ... ..	increased ... ..	lessened	lessened	lessened.
Benefit if medical school is established	great difficulty of access for students	great benefit ...	great benefit ...	great benefit.
Ease of staffing ... ..	more difficult ...	easier ... ..	easier ... ..	easier.

It will be seen that propositions 2, 3 and 4 offer advantages on practically every score over that of proposition 1.

If use of the present Royal Perth Hospital site and buildings is not possible, it is suggested that new buildings either at the Infectious Diseases Branch of the Royal Perth Hospital, close to Hollywood Hospital, or the Edward Millen Home would be conveniently situated.

The State is losing, at a conservative estimate, upwards of £500,000 annually on tuberculosis, i.e., over £1 per head of population. From this aspect alone, the question is, to quote an old aphorism, not whether we can afford a whole-hearted campaign against the disease, but whether we can afford not to.

If a new hospital block of 200 beds were established in the metropolitan area, the existing Wooroloo accommodation, after remodelling, and with some additions, would suffice. There would then be 200



Perth beds, plus 200 Wooroloo beds (allowing for a loss of 30 with remodelling) plus 45 Edward Millen Home beds—a total of 445. The colony would accommodate say 50 ex-patients.

If only 100 beds were reserved at the new Royal Perth Hospital as a thoracic unit, another 100 beds would have to be provided at Wooroloo. This could be done by building more chalets for "up" patients.

No estimate of the relative costs is offered here, but, in any case, the utilisation of the Royal Perth Hospital site, either for 200 or 100 beds would prove a substantial saving because of their subsequent availability for general hospital purposes when no longer required for tuberculosis. Further, building costs are less in the metropolitan area than in the country.

The time factor is important. A mass radiography programme will require some time to organise. Extra beds might be available in the Royal Perth Hospital in one or two years, or even earlier. However, it needs to be emphasised that the beds must be available before a programme of mass case-finding is commenced, and the urgency of the provision of extra accommodation is once more stressed. Recent experience with men who have been diagnosed as suffering from pulmonary tuberculosis by routine X-ray examinations on discharge from the services has shown that a relatively high percentage are diagnosed when their disease is early and amenable to treatment. It is shameful that we as a community should leave those of us who have the disease in the treatable form to wait until their condition becomes obviously worse before lending them a helping hand. At the end of five years the full programme should be in operation, provided personnel arrangements can be made.

It has been emphasised earlier in this memorandum that a complete re-orientation of professional personnel will have to be made if we are to attack seriously the problems of tuberculosis control. It has been pointed out that in a complete and effective programme the aim is detection, isolation and treatment of all known cases of the disease. Up to the present, treatment only has been provided for. The centre of gravity of our activities must undergo a shift and the emphasis be placed on "field work," i.e., case-finding, rehabilitation and aftercare, with of course, progressive extensions in treatment of cases diagnosed.

It is necessary to mention also measures to be adopted for the control of tuberculosis of bovine origin; that is to say, disease caused by the consumption of raw cows' milk containing tubercle bacilli. About 30 cases of non-pulmonary tuberculosis (disease of the lymphatic glands, bones, joints and abdomen) present themselves for treatment each year at the Children's Hospital. If we assume that 0.5 per cent. of all cases of pulmonary tuberculosis are bovine in origin (the figures are 1 per cent. in England and 2 per cent. in Scotland), then 0.5 per cent. of the estimated 1,900 cases of pulmonary disease in existence at any one time, i.e., nine cases, are caused by a milk-borne infection, as well as perhaps 25 per cent. of all cases of non-pulmonary disease in the adult.

There are two methods for the control of milk-borne tuberculosis:—

1. The periodic tuberculin testing of all herds, with destruction of positive reactors.

2. The boiling or pasteurisation of all cows' milk used for human consumption.

Method 1 has been used in some other countries, for instance in the State of New York, with conspicuous success.

Method 2 is more extensively used, for instance in Toronto, also with conspicuous success.

#### *State Sanatorium, Wooroloo.*

The following is a report on the activities of the sanatorium.

With the end of the war it is hoped that it will be possible to continue an extensive programme of renovation of the premises generally, most of which have not even been painted for the past 30 years. It is pleasing to record the painting and renovation of the kitchen block and patients' dining rooms, completed in 1945.

However, in spite of the nature of the accommodation and equipment, it is felt that everything that could be done for the benefit of the patients has been done.

A heavy burden has been placed on the sanatorium in the past two years with the end of the war and the discharge of men and women from the Services. At the end of 1945, the sanatorium contained 63 Service personnel. This extra work has taxed the resources of the sanatorium appreciably.

There has been no change in the policy of transferring the patients to the Royal Perth Hospital for their major surgery. We have been fortunate in having the co-operation of the honorary and resident medical staffs of the hospital.

A point that requires special mention is the incidence of tuberculous infection among the nursing staff. This problem has not yet been solved. Every care is taken of the nurses, and when in the wards attending to the infectious cases, they wear masks and gowns. Mantoux testing and X-ray examinations are carried out at intervals of six weeks. If, however, any nurse contracts the disease, it is expected that, owing to the frequency of examinations, the diagnosis will be made at the stage where treatment should yield excellent results.

#### *Staff.*

*Medical-Resident.*—Dr. Dalla Torre resigned early in 1945, although he is continuing the clinic at Fremantle Hospital.

In February, 1945, we lost the services of Dr. Alan Penington, but in February, 1945, and April, 1945, we were fortunate to secure Drs. Greer and Guinan respectively for the medical staff.

Unfortunately, Dr. Eileen Borbridge resigned in June, 1945, because of her marriage. This officer had given us extremely able and valuable assistance and her loss was keenly felt.

*Consultant.*—The following are the consultant appointments:—Mr. F. J. Clark as Honorary Surgeon vice Mr. J. P. Ainslie who resigned in June, 1945, following very helpful service in the difficult war years; Dr. R. Le P. Muecke, Honorary Consulting Physician, Dr. Hislop, Honorary Consulting Physician, Dr. Kingsbury, Honorary Consulting Bacteriologist, and Dr. G. Troup, Honorary Consulting Anaesthetist.



*Nursing.*—The shortage in our nursing staff has become increasingly acute, and it has been, at times, very difficult to carry on. The public owes a debt of gratitude to our Matron, Miss Lochhead, and to our trained and untrained nursing staff, for the devotion to duty that they have shown in enabling the sanatorium to keep going under conditions of great difficulty, often to the detriment of their own health.

At the end of 1945, it was found necessary to recruit the services of some male nursing orderlies for the male wards. Further assistance was obtained from the Services, who were able to supply nursing staff for the Service patients in our wards. Our thanks are particularly due to the former D.D.M.S., Western Command, Colonel Trethowan, for his understanding and co-operation.

*Secretarial.*—The office staff continues to work very efficiently under Mr. Stansfield, the secretary. We have lost the services of Miss Lethby through marriage, and the additions to the staff consist of Miss P. Elfverson, our stenographer, Miss M. Parker, clerk, and Miss S. Cornford, telephonist, whose services have been very satisfactory.

Although we much regretted the loss of the services of our former storeman, Mr. Bruce Mitchell, who has been transferred to "Sunset," we have been fortunate in securing Mr. Trigg to take his place.

*Laboratory.*—It has been found necessary to enlarge the laboratory staff, as Miss Bothwell could not cope with all the work. Mrs. Greer was recruited in March, 1945, for this purpose.

*Engineering.*—Mr. Longwill has been transferred to the position of Engineer to the Government Hospitals, and Mr. Roberts has been promoted to the position of Engineer. He and his staff continue to give excellent service.

With the appointment of two resident carpenters, it has been possible to keep pace with repair work to a certain extent. In addition, a considerable amount of renovation has been carried out on the six cottages occupied by married members of the orderly and kitchen staff, making them more fit for habitation.

*Kitchen.*—Approval has been obtained for the appointment of a dietician, but as there are none available, this appointment has not yet been filled.

*Domestic and Orderly.*—There have been shortages from time to time, but we have been fortunate in having a nucleus of employees who have rendered yeoman service.

Special mention should be made of our ground staff, who, under the guidance of Mr. Stansfield, have commenced a large scale plan of tree and lawn planting, and who have already considerably improved the amenities of the sanatorium. When the plan is complete the grounds will have a beauty that is well fitted to the natural features and contours of the site. Their excellent work needs encouraging and extending.

#### *Treatment.*

The following are some aspects of treatment carried out at the sanatorium. A combination of prolonged bed rest with active "collapse" measures is firmly believed in. These include artificial pneumo-

thorax, with or without pneumolysis, or division of adhesions, phrenic nerve paralysis, pneumoperitoneum and thoracoplasty. Because of nursing shortages, the bed rest is neither so complete nor so prolonged as it should be; the inconvenient lay-out of the wards is also prejudicial to proper control of the patients' rest.

It has not been found possible to present a complete analysis of the treatment carried out on all patients admitted and treated during the years 1944 and 1945. However, the following is a summary of the various measures of collapse treatment instituted in the patients actually in residence of the sanatorium on 31/12/45. They represent a fair sample of the whole.

		No.	No.	
		Admissions.	Discharges.	Deaths.
1944	.. ..	238	206	55
1945	.. ..	230	166	51

Of 226 patients in the sanatorium on 31/12/45, 222 had pulmonary tuberculosis. In 207 T.B. had been found in the sputum, and in 15 T.B. had not been found in the sputum. Two had non-pulmonary tuberculosis and two were under observation. Of the 222 pulmonary cases, 184 were under, and 38 were over the age of 45 years.

It is interesting to note that more intensive search for tubercle bacilli by concentration, cultural and guinea pig inoculation methods has reduced the percentage of patients classified as T.B. minus from 18 per cent. at the end of 1943 to 7 per cent. at the end of 1945. This is of vital importance in estimating the progress of the disease and in assessing the indications of treatment. The bacteriological laboratory is one of the key positions in the sanatorium.

Ten only had "early" or "minimal" disease.

One hundred and four had moderately advanced disease with an improved outlook.

One hundred and eight had far advanced disease and had poor prospects of recovery or arrest of the disease.

Nevertheless, the aim of treatment is to heal the disease in all the minimal cases, in many of the moderately advanced and in some of the far advanced cases.

In 140 cases out of a total of 222 (63 per cent.) or out of a total of 184 cases under 45 years of age (76 per cent.) some measure of active collapse treatment was attempted. This was successfully instituted in 130 and unsuccessful in 10; thus it was successful in 57 per cent. of the total number of patients, or in 71 per cent. of those under 45 years of age.

The following are details of the measures adopted in these 130 cases:—

Artificial pneumothoraces induced in ..	128
Of these, both lungs collapsed in 35 (not necessarily simultaneously).	
Total number of artificial pneumothoraces induced in 138 patients .. ..	163
Total unsuccessful attempts at induction of artificial pneumothoraces .. ..	22
Total attempted inductions .. ..	185

One hundred patients were continuing artificial pneumothorax refills on 31/12/45.



In a total of 163 artificial pneumothoraces (induced in 128 patients) in 95 (58 per cent.) it was found necessary to perform thoracoscopy or internal pneumolysis because of adhesions interfering with adequate collapse and requiring division by cauterisation. Of these, 77 had internal pneumolysis (47 per cent.).

In all, 86 operations for internal pneumolysis and 34 thorascopies were performed on these patients (more than one operation may be necessary for the division of adhesions in any one artificial pneumothorax).

Fifty phrenic nerve operations were performed in 44 patients.

Thirty-seven pneumoperitoneums were successfully induced.

Five patients had thoracoplasty.

Eight patients were bronchoscoped.

Two patients had intra-cavitary drainage.

A note should here be made of the increasing importance of tracheo-bronchial disease. This may seriously impair the efficiency of an artificial pneumothorax and may profoundly alter the outlook of the patient. The services of a specially trained bronchoscopist are very necessary in any modern sanatorium. This work is at present carried out under conditions of considerable difficulty at the Royal Perth Hospital.

The following are particulars of artificial pneumothorax and pneumoperitoneum refills:—

In 1944 there were 3,613 refills and 84 pleural fluid aspirations. In 1945 there were 3,562 refills and 96 pleural fluid aspirations.

#### *X-ray Department.*

The activities of the X-ray Department were handicapped by the shortage of films because of the war. In 1944, 923 films were used and in 1945, 893 films were used. In addition, in 1944 there were 5,200 fluoro-scopic examinations and in 1945, 5,122.

#### *Pathological and Bacteriological Laboratory.*

Pathological and bacteriological investigations play an increasingly important role in the control of treatment. Cultural methods for the isolation of tubercle bacilli need further extension and the services of a Resident Medical Officer to act as Bacteriologist are necessary.

The present laboratory is much too small, and it is proposed to transfer to a bigger room in the administrative block in the near future.

The following is a summary of the laboratory work in the years 1944 and 1945:—

	1944.	1945.
Sputum for tubercle bacilli ..	3,363	4,007
Sputum for tubercle bacilli—concentration method .. ..	287	453
Cultures .. ..	30	69
Bacteriological examinations ..	100	74
Blood counts .. ..	42	74
Blood sedimentation rates ..	300	82
Pleural fluid examinations (chemical and microscopical) .. ..	84	96
Microscopical and chemical examinations of urine ..	277	102
Milk—examinations for tubercle bacilli .. ..	—	88
Smears for leprosy bacilli ..	15	18
Totals .. ..	4,498	5,063

Wassermann reactions, serological examinations, guinea-pig inoculations, histological examinations and various cultures have been performed, as in previous years, by Dr. A. Neave Kingsbury, our Consulting Bacteriologist at the Government Bacteriological Laboratory in Perth. We are indebted to him for this work, and also for his valuable advice on numerous occasions.

#### *Leprosarium.*

There have been no additions to the number of lepers treated at the leprosarium, where we still are served very ably by Mr. and Mrs. Fraser. Four patients are resident and are helping in the care of the gardens and grounds, which are looking very attractive.

#### *Dairy Farm.*

A high standard of management has been maintained by Mr. Wallace, the manager, in spite of labour difficulties and the shortage of superphosphate. A brine cooling plant was installed at the end of 1945. The efficient management is reflected in the profits, those for 1944 and 1945 being £499 and £486 respectively.

#### *Poultry Farm.*

New additions to hen houses and a new brooding shed have been built. An irrigated plot for green feed is also being made. Mr. S. Roberts is to be congratulated on the transactions of the years 1944 and 1945, the profits being £239 and £837 respectively.

#### *Colony.*

In the report submitted at the end of 1943 the importance of rehabilitation and occupational therapy was stressed. The foundation of a colony at Woorloo was described.

Since then, progress has been steady, but has been, and is being, handicapped by the shortage of building material. A contour plan has been prepared for the site of the village settlement and plans for the settlement are in the course of preparation by Mr. Davidson, the Town Planning Commissioner.

The greatest handicap to progress that the colony has encountered is the fact that, according to the regulations of the Commonwealth Social Services Department, a person who receives an invalid pension for pulmonary tuberculosis is not allowed to earn more than 12s 6d. if single, or 25s. if married. This regulation completely ignores the case of the person who is able to work part-time and who, in the interests of his health and well-being, should be doing that work for which he is fit. The consequence is that patients will work in the colony, earn as much as they are allowed to according to the regulations, and then cease work. They are afraid that if they forfeit their pensions in whole or in part through their earning more than the permitted amount they will have difficulty in having their pensions restored if they have to stop work because of subsequent incapacity.

Apart from this point, however, the need for the tuberculous person receiving an invalid pension to earn as much as will supplement his pension to a total of at least the basic wage must be once more urgently stressed. It is an obvious social and economic necessity.



In the years 1944 and 1945 money has been raised by public subscription, and we have been fortunate enough to obtain a day for a street appeal. In 1945 we organised an appeal for a building fund, and were successful in receiving £2,045. In 1944, the appeal raised £4,234, including a grant of £1,000 from the State Government and £500 from the Lotteries Commission. At the end of 1945 our capital held in reserve amounted to £5,245.

A committee under the presidency of Mr. F. Hardouin has been organised in Fremantle under the sponsorship of the Mayor, Mr. F. E. Gibson, and of the Fremantle Rotary Club. This committee has worked with untiring energy, enthusiasm and zeal and has succeeded in raising the sum of £1,500 for the erection of a cottage in the colony village. It is hardly possible to speak too warmly of the generosity and hard work of this committee and their supporters. The building of a model village is a heavy item in capital expenditure, and it would be well if other communities in the State could organise in the way that the Fremantle community has in order to help on our cause.

Further assistance has been given by committees formed at Cunderdin by Mr. McWaters and at Kalgoorlie by Mrs. Gray, where the sums of £80 and £102 were raised respectively. In 1944 a Kalgoorlie committee under the presidency of Mr. McLheney raised £695.

To these committees and their helpers, our grateful thanks are due.

Reference must once more be made to the members of the Wooroloo Welfare Committee who have helped us in our street appeals, and also to Councillor Hines of Fremantle, who has been a good friend on numerous occasions.

It is not proposed to build a township on the old lines of those already existing in the bush. The idea that any shack is good enough for the bush is outmoded. The colony village should be a model in modern architecture and town planning. Houses and buildings are costly these days, but as the people for whom they are intended will have to be housed somewhere at the prevailing cost of housing, the fact that their houses are to be built at Wooroloo and not in other parts of the State will not involve any additional expenditure to the State as a whole. Unfortunately it is the responsibility of the colony to raise this money, and also to build their workshops. It is realised that the task is a heavy one, but the need for this work is so great that it will be actively pursued.

#### *Hostel.*

The hostel was formally opened by the then Minister for Public Health, Mr. A. H. Panton, in June, 1944. It has been highly successful and runs at a profit. During the year 1945 the profit made amounted to £228.

#### *Tinsmiths' Shop.*

This industry continues as in former years. The nature of the work is very suitable for our patients. We are handicapped by the lack of power machinery and adequate factory buildings, but it is hoped that this will be overcome when new buildings are erected. A profit of £202 was made during 1945.

#### *Vegetable Garden.*

Value of produce in 1944 and 1945 was £549 10s.

#### *Orchard.*

As was explained in the last report, the orchard site was purchased primarily as a site for the colony. However, this has provided seasonal work for patients, and although the fixing of prices by the Apple and Pear Board has prevented a good financial showing, it is trusted that the end of the war will enable this to be improved.

#### *General.*

On 18th December, 1944, Mr. L. K. Winton was appointed as permanent secretary to the colony. We are also indebted to Mr. A. J. Bishop, who has very generously consented to act as the Honorary Auditor, and who has, moreover, given freely of his time to looking after our accounts generally.

The fallacy of providing partially incapacitated tuberculous persons with an inadequate pension and not allowing them to supplement their pensions by earnings must once more be stressed. The regulations of the Commonwealth Department of Social Services need to be amended in the light of the special needs of those members of our tuberculous population who are not totally incapacitated but who cannot do a full day's work. It is disheartening to find that our representations pass unheeded.

In spite of handicaps, the policy of colonisation is to be vigorously pursued; there can be no doubt that it will offer many men and their families hope, work and health.

I wish once more to record my appreciation of the encouragement received from the State Government, from the present Minister for Health, Mr. Nulsen, and from his predecessor, Mr. Panton, from Dr. C. L. Park, who was Commissioner of Public Health in 1944, from the present Under Secretary, Mr. H. T. Stitfold, and from his predecessor, Mr. F. J. Huelin, as well as the former Assistant Under Secretary, Mr. W. L. Wilson, and the officers of the Medical Department. Following the resignation of Dr. Park at the end of 1944, I acted as Principal Medical Officer to the Medical Department during 1945, and this heavy extra work was made possible only through the assistance and co-operation of the staff and patients of the sanatorium, to whom I wish to make grateful acknowledgement.

LINLEY HENZELL,

M.D. (London), B.S., B.Sc., D.P.H.

Director, Tuberculosis Branch,  
Medical Superintendent, State  
Sanatorium, Wooroloo.



## REPORT OF THE SENIOR MEDICAL OFFICER OF SCHOOLS.

*The Commissioner of Public Health.*

I have the honour to submit the Health Report in connection with the medical examination of school children during the two years, 1944 and 1945.

As I said in my previous report:—

During the depression, the School Medical and Nursing Staff was sadly depleted and unfortunately the losses in staff that occurred then have never been replaced. Not only do we need these replacements but we need even further additions to the staff. At the moment there are only the equivalent of one and a half School Medical Officers and two School Nurses. The School Nurses work in the metropolitan area, but the Medical Officers work in both the country and metropolitan districts.

The School Medical Officer for the country works full time in the country schools, even so, she is able only to visit each individual school about once in three or four years. But the School Medical Officer who does the metropolitan area can devote only part of her time to school work, as the rest of her time is devoted to Infant Health work. In addition to the examination of school children in the metropolitan area, this officer also does administrative and organising work in connection with this sub-department. Consequently the examination of the children in the metropolitan area is behind schedule and with every successive year, it must necessarily become more and more so.

In 1925 there were three full-time nurses and two full-time school medical officers working the metropolitan area only. Now, 20 years later, we find that the school medical staff for the metropolitan area has decreased to two full-time nurses and a school medical officer working part-time. This is an impossible position, particularly in view of the fact that the number of schools, and consequently the number of children in the metropolitan area, have increased considerably.

When the figures for the number of children examined in the metropolitan area are noted, it will be wondered that so many children have been examined by an officer working on a part-time basis; but this has been possible because considerably more than half-time has been given to the examination of school children in an endeavour to prevent the work from getting beyond control. To do this the officer has perforce had to do much of her Infant Health work out of the departmental hours. It is, therefore, urgently necessary that the School Medical Staff be brought up to an adequate level as soon as possible; for this two additional school medical officers are needed, and at least two more nurses.

In an endeavour to improve the *nutrition* of the children, an extensive drive was started by this Department, with the help of many of the teachers, to educate the children and the parents in regard to the nutritional value of the *Oslo Lunch*. This lunch has been worked out on its nutritional and calorific values, and where used, has proved of great benefit. Some

teachers have taken it up most enthusiastically, and in one infant school 350 children are being served with this lunch each day.

The food is all bought in bulk, which thereby reduces the cost enormously, and the work of preparing and serving the food to the children at the school is carried out by the mothers, who work on a roster basis. The teachers therefore do not have any work to do in connection with the matter, other than the original organisation and introduction of the idea to the mothers. The duty roster is drawn up and each mother gives half a day during each fortnight or month, according to the number shown on the roster. An Oslo Lunch Committee is formed from these mothers and they take over all the arrangements; the head teacher merely starts the ball rolling and keeps a supervisory eye on things to see that they work smoothly. The whole of the work of preparation and distribution is in the hands of the mothers, and therefore does not involve the teachers in any extra work.

At schools where the number of children is too small to warrant the formation of an Oslo Lunch Committee, the head teacher can, and in some cases does achieve the same results by encouraging the children to bring their own Oslo lunch from home.

The Butter Commissioner has been very helpful in allowing the Oslo Lunch Committees extra butter per week in order to butter the bread used. This is an excellent thing for the children, just as it is for mothers, as it allows their own family butter ration to go further.

Also, during the season when eggs are scarce, the Egg Board gives consideration to schools distributing the Oslo lunch.

An Oslo lunch consists of:—

- Two or three slices of wholemeal buttered bread.
- Half a hard boiled egg.
- Half or one ounce of cheese (this is most important).
- A couple of rounds of raw carrot to chew.
- Half a tomato.
- A couple of lettuce leaves.
- A little piece of celery.
- One orange or apple (orange preferably).
- Half a pint milk.

} as obtainable.

The schools at which these lunches have been taken find that the average cost is between 5d. and 6d. per head per day. This is very cheap for such an excellent lunch, and is only possible because all the material is bought in bulk.

This lunch is an enormous improvement on the ones that the child usually buys at the local tuck shop, which in many instances consists of a pie and an iceblock, or again merely a packet of biscuits, whereas the Oslo lunch is well balanced and scientifically constructed.

The visits paid by the school nurses to the parents in regard to medical defects of their children, or as we call it the "follow-up" of the nurses, is a very



valuable section of the work. Many parents are sent notices of medical defects in their children, but a vast number of them ignore these notifications and it is only when they are visited by a school nurse who points out in simple language what the trouble is, and explains the disabilities that are likely to follow from the defect, that the parent becomes really interested and goes ahead with the necessary treatment. Thus it can be seen that "follow-up" work is of vital importance if the doctor's inspections are to be of any real value to the community. That is why it is so essential to have a large and trained team of nurses for this work. As a matter of fact the treatment received by the children is in direct proportion to the amount of visiting the school nurses can do. In fact, many parents tell the nurse that prior to her visit it had not been their intention to have anything done, which goes to show that the people are learning to depend more and more on home visits as a means of helping in the upbringing of their children. Possibly a certain amount of this results from their association with Infant Health nurses in the earlier days of the child's life. In other words the parents are learning to depend more and more on the nurse for advice and guidance in the care of the child. This is a point which should be borne in mind and catered for if good results are to be attained.

There are still no school tonsil clinics or eye clinics, nor have any cleansing stations been established. These are all necessary adjuncts to an efficient school medical service.

It is interesting to be able to report that the percentage of Pediculosis in the schools, still remains low. The figures for the two years under consideration, are as follows:—

				State Schools per cent.	Convents per cent.
Year.					
1944	..	..	..	2.39	3.39
1945	..	..	..	2.4	3.5

This is good, when it is remembered that in 1925 the figures were State Schools 14.8 per cent., Convents 28.5 per cent.

The present low figures were only achieved through persistence and hard work on the part of the school nurses and the teachers. The minute supervision is relaxed, the numbers go up.

The National Fitness Council is undoubtedly working hard to improve the physical condition of the children of the State, but there is still a great deal of work to be done in this regard, and it is hoped that holiday educational camps or health camps for children may be soon established. This is a much needed activity, and it is an aspect of school work which up to the present has been completely ignored in this State. The benefits accruing to children, should one of these camps be established, would be enormous, but the camp should be really more than just a holiday camp, it should be one in which children could stay three, six or twelve months, according to their physical needs.

Children of school age, i.e., 6-14 years inclusive, make up approximately 15 per cent. of the population. Therefore, the care and control of their health is and should be a very vital part of a State's activity, because neglect in these early years may have serious consequences in later life. Therefore, the providing of essential, protective and preventive health services for them is a vital part of any national or State health programme.

Greater care, also, in the future must be given to the health of the pre-school children, i.e., children from two to six years of age. At the present this child is more less neglected, but arrangements should be made and staff provided to deal with this most important section of child life.

E. M. STANG,  
Medical Officer of Schools.

REFERRED FOR MEDICAL ATTENTION.				
Years.		Metropolitan Area.		Country Area.
		Tonsils.	Eyes.	Tonsils.    Eyes.
1944	...	1,249	159	844        232
1945	...	1,258	123	729        276

SCHOOL CHILDREN EXAMINED DURING 1944-45.

COUNTRY AREA.

Year.		Routines.														Total Examined
		Number Examined.		Number Notified.		Number referred for Medical Attention.		Number referred for Dental Attention.		Number referred for Home Attention.		Number referred for Pediculosis.		Recalls.		
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M. & F.
1944	...	3,294	3,487	2,048	2,084	605	595	1,027	1,035	1,234	1,334	4	94	16	17	6,814
1945	...	3,854	3,688	2,067	2,022	572	555	1,026	1,099	1,231	1,377	16	152	...	...	7,542



SCHOOL CHILDREN EXAMINED DURING 1944-45.  
METROPOLITAN AREA.

Year.	Routines.													Total Examined.
	Number Examined.		Number Notified.		Number referred for Medical Attention.		Number referred for Dental Attention.		Number referred for Home Attention.		Number referred for Pediculosis.		Recalls.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M. & F.	M.	F.	M. & F.
1944 ...	3,751	3,615	2,974	2,858	760	783	1,991	1,818	1,536	1,547	785	13	2	7,381
1945 ...	3,334	3,111	2,717	2,527	733	719	1,923	1,800	1,332	1,303	778	1	2	6,448

REPORT OF THE SENIOR DENTAL OFFICER OF SCHOOLS.  
*The Commissioner of Public Health.*

Following is my report on the activities of the School Dental Staff for the calendar years 1944 and 1945.

Normally we have four dentists, but for most of the period under review only three were carrying out their duties, and at the end of 1945 there were only two—myself and Miss Ross. A third member of the staff, Mr. Turnbull, has been on military duties for several years, but expects to be released shortly, while the fourth member, Mr. Cole, after doing good work amongst the small schools for a number of years, decided to return to private practice, and accordingly resigned in September, 1945. We are now trying to get someone to take his place.

In my last report, I mentioned that, from our experience, a trailer fitted as a surgery and drawn by an ordinary car would be better than the one-piece dental van which was being used for the small country schools. Since then we decided that mainly owing to mechanical troubles, the van had outlived its usefulness, and as we had in the meantime obtained a suitable trailer from the R.A.A.F., we transferred the apparatus from the van to the trailer and we were in the process of having Mr. Cole's car fitted up to draw the trailer, when he decided to leave the department. The position now is that the trailer is ready for the road, but we have still to find a dentist and car to go with it.

During the two years the number of small schools visited by the van was 34. Other country schools and convents visited by our other dentists numbered 44, while 30 metropolitan and suburban schools were attended.

I must mention here that it was originally intended that our staff should gradually grow until there were enough dentists to deal with all the school children in the State, but as that ideal has by no means been attained it is necessary for us at the bigger schools to limit those treated to the lower age groups. However, at the small schools visited by the van, all children have been attended. I hope the day will come

when we will be able to do away with any restrictions, and although a very large staff would be necessary, you will understand that the idea is not too ambitious when I tell you the following facts:—

- 1. New Zealand has a staff of more than 400 dentists and dental nurses, who attend to the requirements of all school children and adolescents up to the age of 19.
- 2. In Great Britain the 1944 Education Act makes provision for the future dental treatment of every school child in the country.

All orphanages and similar institutions were visited at intervals—usually during the ordinary school vacations.

Also during school holidays, I visited a number of native institutions. At these places I examined a total of 772 full bloods and half castes, adults as well as children, and for them I did 635 extractions and 150 fillings.

For a period of six months in 1945, Mr. Cole and myself made a tour of the North-West, and as there had been no private dentists operating in most of that district for some years we not only saw to the needs of every child who could be brought to us, but we also did what we could for any adult who wished to consult us. Reasonable fees were charged these people and the money paid into the Treasury. Figures dealing with the adults are as follows:—

Number seen—White .. ..	222
Half caste .. ..	61
Full blood .. ..	20

Work done for them was as follows:—

Silver Amalgam fillings .. ..	100
Cement fillings .. ..	8
Porcelain fillings .. ..	114
Gold inlays .. ..	17
Root treatments .. ..	3
Other treatments .. ..	40
Extractions .. ..	407
Scaling and cleaning .. ..	21



Apart from the adults who presented themselves for treatment, I took the opportunity of examining as many full blood natives as I could; most of those I saw were from the towns, but I also saw a number from the bush. Altogether I examined 189, of whom 88 had all sound teeth and none missing. The other 101 either had had teeth taken out at some time, or had one or more decayed teeth at the time of examination. Most of the people suffered to some extent from gum troubles, in fact only 61 were free of it, and 16 of these had badly stained teeth, which would probably be associated with bad gums later on; that leaves 45 whose mouths were perfect—sound teeth, healthy gums and no dirty stains. The majority of these 45, by the way, came from the Marble Bar district and it was certainly a pleasure to see their beautifully clean, sound teeth and pink healthy gums. Possibly I would have seen more of these if it had been possible for me to have visited more inland districts, and it certainly seems feasible to conclude that the more the natives come into contact with civilisation, the more their teeth deteriorate.

A lot has been written about the disabilities of living in the North-West and there is no doubt that lack of adequate dental facilities is one of the drawbacks which loom large in the eyes of the people concerned; for some years the North-West has been dependant upon an occasional visit by a dentist from the south, plus a little work done recently by Army and Air Force units; but even before the war and during the good days, although dentists sometimes made their homes in one of the coastal towns, they practically always drifted south again after having piled up big bank balances by charging exorbitant fees, and that still remains the trouble—whenever a dentist makes a tour of the country he charges such high fees that many of the people cannot afford to have work done, while those who are able to pay only do so after comparing the total with what it would cost to come down south for treatment. They are, in fact, left with the choice of two evils, and some dentists make no bones about pointing this out to their intended victims.

I consider that the proper method of providing dental attention for an isolated and widespread community such as at present dwells in the North-West, is to appoint a salaried man to do the work. He would make his home in one of the most convenient towns and visit the other centres at regular intervals;

and he would need to be paid a salary adequate enough to induce him to remain in the job. The basis of his work could be similar to that which we have just been doing—all children to be treated free of charge and adults to be charged moderate fees. Of course denture work would have to be undertaken, and a dental technician would need to be appointed to do the mechanical work associated with the denture making; and to complete the team, an attendant or orderly would very likely be necessary as well. This would be nothing unusual since the ordinary private dental surgery contains the dental surgeon, nurse and mechanic.

I want to point out that when referring to the North-West population, I meant half castes as well as whites, since many of the former are very useful citizens leading excellent normal lives.

Reverting to the ordinary school work, the number of children examined was 5,311. Of these, 779 needed no attention; 3,362 agreed to have the necessary work done at the schools, while the balance consisted of those who were to be done privately, or whose parents did not believe in having the mouths attended at all. The actual work done consisted of the following items:—

Silver Amalgam fillings .. ..	2,652
Copper Amalgam fillings .. ..	2,145
Cement fillings .. ..	2,429
Porcelain fillings .. ..	768
Silver Nitrate treatments .. ..	2,435
Root treatments .. ..	36
Other treatments .. ..	1,885
Gold or substitute gold inlays ..	27
Extractions .. ..	7,697
Prophylaxis .. ..	977

On Saturday mornings we went regularly to Claremont Mental Hospital, and allied institutions. The number of patients seen was 798, and for them the following work was done:—

Extractions .. ..	588
New dentures .. ..	56
Denture repairs .. ..	77
Scaling and cleaning .. ..	12

The mechanical part of the denture work was done by the Dental Hospital.

A. G. McKENNA,  
Senior Dental Officer of Schools.

## REPORT OF THE MEDICAL SUPERVISOR OF INFANT HEALTH.

*The Commissioner of Public Health.*

I have the honour to submit my report on Infant Health Centres and their activities for the two years, 1944-45.

Even although these were the war years, the Infant Health work did not stand still, because in 1944 the following sub-centres were opened: Greenbushes, Cunderdin, Northampton, Scarborough, Rockingham. Moora also started as a part-time centre. In 1945 three further sub-centres were opened, viz.: Belmont, Dalkeith and Bayswater (second branch).

In spite of the fact that these years were most difficult from the point of view of getting nurses, still the Infant Health section was very fortunate as it managed to keep all its centres working throughout this period. Occasionally one might have been empty for a few weeks, but never for very long, and certainly no centre shut down. This was rather astounding, particularly as apparently in the other States many Infant Health centres had to be closed down.



The sub-centres are run by the nurses from their main centres. In some cases the sub-centres and main centres are all of equal value and each have a day per week. In other cases the main centre may be the principal section and the sub-centre merely used a day a week or a fortnight, according to the need.

Sub-centres are greatly to be desired, because by their means the radius of Infant Health activity is extensively widened, the principle of Infant Health work being that we take the centre to the mothers rather than expect the mothers to come to the centres.

The work is purely voluntary as far as the mothers are concerned, therefore the centre has to be made as attractive to her and as accessible as possible, otherwise she will not use it.

From a child's standpoint it is desirable that the mothers do use these centres, as thereby the health of the child is considerably improved. The motto of the Infant Health Centres is to "Keep Well Babies Well."

We do not give any medical advice at these centres, but we do train the mothers—because the work is mainly educational—in the most modern methods of the care and control of their children.

The Infant Health Centres do extremely valuable work amongst the babies of the community, and this is a service that is greatly appreciated by the mothers, so much so that we estimate in this State that at least 90 per cent. of the babies born during the year attend the centres some time or other during their first year of life. This is a very excellent attendance.

The Correspondence Infant Health Centres Scheme still continues to do most valuable work amongst the scattered and outback mothers, and these mothers avail themselves of this service most readily. Also, through this scheme we get in touch with a great number of expectant mothers, far more than through any other method that we have in force.

Very little building of new Infant Health Centres was carried out during this period, owing, of course, to lack of manpower, timber, etc. Nevertheless, many centres are going ahead, getting their plans drawn up, and collecting their money, so that they will be able to proceed with the erection of their buildings as soon as conditions permit.

In the country districts all centres are incorporating with the centre building, a flat for the nurse. This is most desirable, as in many country towns living conditions are hard to obtain and when they are obtainable, they are costly. Furthermore, all the nurses like to have their own private home, as then they can have some home life.

Speaking generally, the country centres are more difficult to work than the city centres, owing to the travelling involved, and it is necessary that there should be power to move nurses from city to country

as exigencies of the work require, as otherwise it is difficult to keep nurses in country centres for more than two or three years, if they cannot see the possibility of getting a transfer to the metropolitan area.

The local committees are encouraged to do everything possible to make the Infant Health nurse's life in the country a happy one, and it is for this reason that flats are being built on to all new centres. If a nurse is happy in her work, then she is contented, and will not only stay on the job but will be much more efficient in her work.

We have been very fortunate on the whole that our Infant Health staff have been most loyal and faithful to the work throughout all the most difficult war years. To them the State owes a great debt of gratitude.

Skilled care during an infant's life is the foundation of a healthy adult life, and on the foundation of any building depends its future. So then with human bodies. Build wisely in infancy, and a healthy future is assured.

E. M. STANG,  
Medical Supervisor of Infant Health.

*Annual Summary of Work done by Infant Health Centres, 1944-45.*

Total for year ended :	Total No. of Individual Cases dealt with	Total Attendances of Babies.	Total No. of effective visits to houses.	Total No. of Consultations.
30-6-44 ...	13,056	132,793	16,582	153,900
30-6-45 ...	13,635	139,900	16,164	165,405

*Latest available Infant Mortality rates per 1,000 live births for the Australian States, Australia as a whole and also New Zealand:*

	1944	1945
New South Wales .. .. .	30.68	—
Victoria .. .. .	31.96	28.03
Queensland .. .. .	31.28	—
South Australia .. .. .	29.07	27.93
Western Australia .. .. .	32.57	29.52
Tasmania .. .. .	38.27	(a) 26.52
Northern Territory .. .. .	22.47	—
Australian Capital Territory .. .. .	23.44	—
Australia .. .. .	31.33	—
New Zealand .. .. .	30.12	(a) 28.23

(a) Nine months ended September, 1945.



REPORT BY THE GOVERNMENT PATHOLOGIST AND BACTERIOLOGIST.

The Commissioner of Public Health.

I have the honour to submit herewith a brief report on the activities of the Public Health laboratories for the years 1944 and 1945. These were difficult years on account of changing staff and war-time shortages of laboratory supplies. Further, the writer acted as Commissioner of Public Health in addition from December, 1944, and was consequently able to give only cursory attention to his laboratory duties.

Swineherd's Disease in W.A. (?)

A curious disease has been noted among the abattoir and meat inspecting staff at a bacon factory. An inspector who had previously suffered from Dengue and Sandfly Fever described his symptoms as similar to those of the two diseases combined. The onset is sudden, the temperature rising to about 103° F. and falling by lysis after about a week. A faint macular rash is sometimes seen on the abdomen and flexures on the third or fourth day. There is intense headache and conjunctivitis develops early. A curious feature is that convalescence is exceedingly

protracted, and it may be six weeks or more before work can be resumed. Neither the temperature remission nor a definite intestinal phase as described from Savoy has yet been noted. Investigations are proceeding.

Nutritional Survey.

It will be remembered that regular surveys of the school children in one of the poorer metropolitan districts were commenced towards the end of 1942. The object was to assess any retrogression in nutrition that might follow war-time rationing. Heights, weights, and haemoglobin percentages were recorded, and notes were also made of any signs of vitamin deficiencies. Surveys were made in 1942 and in the two succeeding years. Though the findings were complicated by an unexpectedly large turnover of students to and from other schools, the findings in 1944 accorded generally with those of 1942, viz., the average nutrition was good, particularly among the girls, though some indications of slight vitamin deficiencies were noted.

The following table gives a brief resume of the number of Specimens examined under some of the more important headings. Corresponding totals for 1939 and 1943 are included for comparison. It is emphasised that the numbers refer to specimens and not to cases: multiple specimens are sometimes received from one case:—

Tests.				Results.	1939.	1943.	1944.	1945.
Diphtheria ... ..	Cultures for <i>B. diphtheriae</i>	Positive ... ..			391	317	209	201
		Negative ... ..			5,809	5,551	3,334	2,634
Gonorrhoea ... ..	Complement Fixations	Positive ... ..			142	761	562	765
		Negative ... ..			911	2,187	2,611	2,248
		A.C. ... ..			...	22	26	29
	Smears ... ..	Positive ... ..			632	1,382	583	447
		Suspicious ... ..			...	101	31	50
		Negative ... ..			4,444	10,295	7,037	4,470
Leprosy ... ..	Smears ... ..	Positive ... ..			0	226	300	329
		Negative ... ..			5	418	696	1,335
Syphilis ... ..	Wassermann Reactions (bloods)	Positive ... ..			398	428	353	499
		Negative ... ..			3,708	5,766	5,590	5,797
		A.C. ... ..			...	15	32	35
	Wassermann Reactions (C.S.Fs.) ... ..	Positive ... ..			...	...	26	18
		Negative ... ..			...	...	190	301
		A.C. ... ..			...	...	2	3
Typhoid Fever ... ..	Widal Reactions ...	Positive ... ..			10	19	30	52
		Negative ... ..			160	200	195	202
Typhus Fever (Brill's) ...	Weil-Felix Reactions	Positive ... ..			41	66	68	86
		Negative ... ..			118	153	157	166
Tuberculosis ... ..	Sputa ... ..	Positive ... ..			101	66	43	80
		Negative ... ..			772	567	466	497
	G.P. Inoculations ...	Positive ... ..			5	1	8	16
		Negative ... ..			63	52	69	62
Undulant Fever ... ..	Agglutination ...	Positive ... ..			...	4	4	11
		Negative ... ..			...	215	221	241
Morbid Histology ... ..	... ..	Malignant ... ..			30	47	82	84
		Precancerous ... ..			...	5	8	8
		Non-malignant ... ..			111	130	166	170
Medico-Legal Cases ... ..	... ..	... ..			25	20	28	25
Bacterial Counts ... ..	Waters ... ..	... ..			763	802	1,066	983
		Milks ... ..			12	62	43	52



*Rh. Grouping.*

Rh. groupings on behalf of the Red Cross Transfusion Service was continued in 1944. This work, however, became more and more time-consuming with the discovery of additional sub-groups, and finally it was taken over by Dr. G. A. Kelsall, Acting Medical Director of the Transfusion Service. Specimens of blood forwarded to these laboratories for Rh. determination are now referred to the Red Cross Laboratory.

*Undulant Fever.*

Among the specimens of blood submitted for the Widal and/or Weil Felix reactions, four were found in 1944 to agglutinate B. abortus, as compared with eleven in 1945.

Serological reactions for syphilis and gonorrhoea have shown a marked increase during the war years. A Kahn test is done in addition to the Wasserman whenever requested by the physician submitting the specimen. It is also carried out on all bloods yielding a doubtful Wasserman result. The number of Kahn tests undertaken in 1944 and 1945 were 2,010 and 2,481 respectively.

Hydatid complement fixation tests were made on a number of specimens: eight of 26 were positive in 1944 and none of 13 was positive in 1945.

The morbid histology figures have been swelled by specimens received from the Children's Hospital in 1944, and from the Fremantle Hospital in 1945.

The numbers of medico-legal cases give little indication of the time that must be given to these investigations. No less than 93 exhibits were examined in connection with the 25 cases referred by the Police in 1945.

Additional to the milk examinations shown in the table, 59 samples were examined for the type of organism. Under "General Bacteriology" 230 and

591 reports were furnished; 44 and 82 chemical and general examinations were performed; 24 and 17 pregnancy tests and 90 and 91 complete blood counts for practitioners were undertaken in the two years under review.

*Equipment.*

Neither the new Binocular Microscope nor the large electric centrifuge had been received at the end of 1945. On account of the numbers of Kahn tests now undertaken, a special Kahn shaker has become necessary. The water distillation plant, the paraffin embedding bath and the 56° C. water bath are in need of renewal.

*Staff.*

The excellent work of Mr. W. C. Croome, when so much of the pathologist's time was diverted to the duties of Acting Commissioner, is worthy of special mention.

Mr. A. F. Drummond was posted to the R.A.A.F. on 19th February, 1944.

Miss H. O. Pearce resigned prior to marriage on 20th June, 1945.

Miss L. A. W. Anderson was appointed a temporary assistant as from 2nd July, 1945.

Miss G. A. Pascoe resigned prior to marriage on 29th November, 1945.

Mr. C. Flower of the Inspecting Branch kindly assisted in the laboratory during the acute staff shortage from 14th December, 1945.

The writer acted as Commissioner of Public Health in addition to his other duties from 21st December, 1944, until the end of 1945.

A. NEAVE KINGSBURY,  
M.D., B.Sc., D.P.H., D.T.M. & H.,  
Government Pathologist and Bacteriologist.



MEAT INSPECTION.

Animals slaughtered at Abattoirs under Government Supervision for the year 1944:—

Cattle	..	..	..	..	48,366
Calves	..	..	..	..	3,991
Sheep	..	..	..	..	741,089
Pigs	..	..	..	..	121,079
Grand total all animals slaughtered					914,525

CONDEMNATIONS.

Condition.							Carcases.	Part Carcases.	Organs.
Actinomycosis	...	...	...	...	...	...	...	73	228
Abscess	...	...	...	...	...	...	...	30	458
Angioma	...	...	...	...	...	...	...	...	211
Emaciation	...	...	...	...	...	...	1,718	...	...
Fatty Infiltration	...	...	...	...	...	...	...	...	2,114
Hydronephrosis	...	...	...	...	...	...	...	...	23,227
Hydatids	...	...	...	...	...	...	...	...	8,169
Icterus	...	...	...	...	...	...	15	...	...
Inflammation	...	...	...	...	...	...	82	655	2,250
Lymphadenitis	...	...	...	...	...	...	...	11	...
Melanosis	...	...	...	...	...	...	...	...	195
Moribund	...	...	...	...	...	...	87	...	...
Necrosis	...	...	...	...	...	...	...	...	3,874
Piroplasmosis	...	...	...	...	...	...	5	...	...
Pyrexia	...	...	...	...	...	...	63	...	...
Putrefaction	...	...	...	...	...	...	161	324	551
Pyæmia	...	...	...	...	...	...	16	...	...
Sepsis	...	...	...	...	...	...	252	...	...
Traumatism	...	...	...	...	...	...	90	68	...
Tuberculosis	...	...	...	...	...	...	699	726	216
Unmarketable	...	...	...	...	...	...	...	1,021	1,021
Miscellaneous	...	...	...	...	...	...	11	...	...
Totals	...	...	...	...	...	...	3,199	2,908	42,514

Animals Slaughtered in Country Districts in Private Abattoirs under the Supervision of the Local Health Authorities for the Year 1944.

District.					Cattle.	Calves.	Sheep.	Pigs.	Total.	Condemnations.		
										Carcases.	Part Carcases.	Organs.
Albany	...	...	...	...	1,193	187	13,340	86	14,806	348	...	1,304
Bunbury	...	...	...	...	1,731	321	12,411	45	14,508	8	9	738
Busselton	...	...	...	...	724	2	4,252	25	5,003	10	32	881
Collie	...	...	...	...	1,341	40	7,897	...	9,278	12	7	1,145
Geraldton	...	...	...	...	1,861	205	25,309	130	27,505	167	62	2,051
Katanning	...	...	...	...	509	51	4,641	...	5,201	11	4	508
Merredin	...	...	...	...	847	25	13,215	7	14,094	6	10	518
Narrogin	...	...	...	...	542	42	5,125	7	5,716	5	...	79
Northam	...	...	...	...	1,129	138	12,286	139	13,692	9	12	671
York	...	...	...	...	275	48	2,807	...	3,130	1	4	120

Animals brought in for Inspection at Approved Meat Inspection Depots for the Year 1944.

Place.					Cattle.	Calves.	Sheep.	Pigs.	Total.
Perth Market	...	...	...	...	658	18,856	130	242	19,886
Carcases Condemned	...	...	...	...	6	239	5	5	255
Fremantle Market	...	...	...	...	41	1,259	20	4	1,324
Carcases Condemned	...	...	...	...	1	16	...	...	17
Organs Condemned	...	...	...	...	6	...	1	...	7



## MEAT INSPECTION.

Animals Slaughtered in Abattoirs under Government  
Supervision for the year 1945:—

Cattle	..	..	..	..	47,313
Calves	..	..	..	..	4,019
Sheep	..	..	..	..	652,871
Pigs	..	..	..	..	123,644
Grand total of animals slaughtered					827,847

## CONDEMNATIONS.

Condition.	Carcases.	Part Carcases.	Organs.
Abscess ... ..	...	397	632
Actinomycosis ... ..	...	522	90
Angioma ... ..	...	...	215
Emaciation ... ..	2,363	...	...
Fatty Infiltration ... ..	...	...	2,097
Hydronephrosis ... ..	...	...	12,800
Hydatids ... ..	...	...	5,780
Icterus ... ..	106	...	...
Inflammation ... ..	93	3	13,245
Lymphadenitis ... ..	11	27	...
Melanosis ... ..	...	...	722
Moribund ... ..	63	...	...
Necrosis ... ..	...	...	13,990
Piroplasmosis ... ..	4	...	...
Pleuro-Pneumonia ... ..	1	...	14 (lungs)
Putrefaction ... ..	121	532	162
Pyæmia ... ..	20	...	...
Pyrexia ... ..	90	...	...
Sepsis ... ..	165	...	...
Traumatism ... ..	52	738	...
Tuberculosis ... ..	868	988	109
Unmarketable ... ..	15	3	385
Miscellaneous ... ..	54	9	14
Totals ... ..	4,026	3,219	50,255

*Animals Slaughtered in Country Districts at Private Abattoirs under the Supervision of Local Health Authorities.*

Year 1945.

District.	Cattle.	Calves.	Sheep.	Pigs.	Total.	Condemned.		
						Carcases.	Part Carcases.	Organs.
Albany ... ..	903	80	13,405	356	14,744	148	4	1,367
Busselton ... ..	719	47	4,604	25	5,395	13	35	584
Bunbury ... ..	1,670	367	13,805	137	15,979	10	14	918
Collie ... ..	1,360	44	8,541	Nil	9,855	3	2	805
Geraldton ... ..	1,039	85	15,967	76	17,167	56	38	2,223
Katanning ... ..	547	64	4,863	Nil	5,474	7	2	365
Merredin ... ..	631	26	10,076	Nil	10,733	34	20	193
Narrogin ... ..	590	50	5,373	17	6,030	1	2	416
Northam ... ..	1,162	223	1,333	296	14,813	10	20	757
York ... ..	169	24	1,971	Nil	2,164	2	13	251

*Animals brought in for Inspection at Approved Meat Inspection Depots for the year ending 1945.*

Place.	Cattle.	Calves.	Sheep.	Pigs.	Total.
Perth Markets ... ..	582	17,492	169	288	18,531
Carcases Condemned ... ..	14	292	...	15	321
Fremantle Markets ... ..	33	1,637	3	4	1,677
Part Carcases Condemned ... ..	6	...	...	...	6
Organs Condemned ... ..	2	...	...	1	3



PLANS AND SPECIFICATIONS OF SEPTIC TANKS  
EXAMINED AND APPROVED.

Year 1944.—Number plans, 346; revenue, £374.  
Year 1945.—Number plans, 733; revenue, £774.

SAMPLES OF FOOD AND DRUGS SUBMITTED TO  
THE GOVERNMENT ANALYST FOR COMPLIANCE  
WITH THE FOOD AND DRUG REGULATIONS.

Year 1944.—Number of samples, 71; number failing  
to comply, 19.  
Year 1945.—Number of samples, 66; number failing  
to comply, 38.

LEGAL PROCEEDINGS TAKEN BY THE  
INSPECTION BRANCH.

Year 1944.—Complaints, 24; convictions, 21; dismissed,  
1; withdrawn, 1.

				£	s.	d.
Costs recovered	..	..	..	7	18	0
Fines imposed	..	..	..	48	10	0
Total	..	..	..	56	8	0

One case under V.D. section of the Health Act—three  
months' imprisonment imposed.

Year 1945.—Complaints, 27; convictions, 19; dismissed,  
4; withdrawn, 3.

				£	s.	d.
Costs recovered	..	..	..	34	2	0
Fines imposed	..	..	..	104	0	0
Total	..	..	..	138	2	0

One case nine days' imprisonment imposed.

FOOD CONDEMNED AS UNFIT FOR HUMAN  
CONSUMPTION.

1944.—Article: 88¾ dozen bottles of pickles, 859 lbs.  
boneless mutton, 1,416 lbs. boneless beef, 14 carcasses  
mutton, 144 tins of jam.  
1945.—Nil.



NOTIFICATIONS OF EACH TYPE OF INFECTIOUS DISEASE RECEIVED BY THE DEPARTMENT OF PUBLIC  
HEALTH FOR EACH WEEK OF THE YEAR ENDED 31st DECEMBER, 1944.

Week.	Undulant Fever.	Malaria.	Typhoid.	Diphtheria.	Scarlet Fever.	Pulmonary Tuberculosis.	Other Tuberculosis	Brills Disease.	Puerperal Fever.	Leprosy.	Dysentery.	Infantile Paralysis	Cerebro Spinal Meningitis	Lethargic Encephalitis
1 ...	...	...	...	7	4	5	...	1	...	...	1	...	5	...
2 ...	...	...	...	9	5	2	...	5	...	...	...	...	5	...
3 ...	...	2	...	7	9	3	...	3	...	...	...	...	6	...
4 ...	...	...	...	13	6	3	...	1	...	...	...	...	2	...
5 ...	...	...	2	10	5	9	...	...	...	...	...	...	7	...
6 ...	...	...	...	9	2	2	...	4	...	...	...	1	13	...
7 ...	1	...	...	12	11	3	...	...	...	...	...	...	5	...
8 ...	...	...	...	21	12	7	...	5	...	...	...	...	1	...
9 ...	...	...	...	14	5	1	...	2	...	...	...	...	4	...
10 ...	...	...	1	15	3	1	...	5	...	...	...	...	6	...
11 ...	...	3	...	6	2	12	...	4	...	...	...	...	3	...
12 ...	...	...	...	10	10	6	...	2	...	...	...	...	3	...
13 ...	...	...	...	14	8	3	...	1	...	...	...	...	3	...
14 ...	...	...	...	13	3	2	...	3	...	...	...	...	...	...
15 ...	...	1	...	9	3	1	...	1	...	...	...	...	2	...
16 ...	...	...	1	14	7	3	1	4	...	...	...	1	3	...
17 ...	...	...	...	10	7	9	...	4	...	...	...	...	3	...
18 ...	...	...	...	7	5	2	...	2	...	...	...	...	2	...
19 ...	...	1	...	13	6	13	...	6	...	1	1	...	4	...
20 ...	...	...	5	11	1	1	...	1	...	...	...	...	1	...
21 ...	...	1	1	16	10	3	...	4	...	...	...	...	2	...
22 ...	...	1	1	8	10	3	...	2	...	...	1	...	...	...
23 ...	...	4	...	8	8	3	...	7	...	10	...	...	4	...
24 ...	...	...	...	14	9	...	...	2	...	...	...	...	2	...
25 ...	...	...	...	10	8	8	...	4	...	...	...	...	3	...
26 ...	...	...	...	8	15	1	...	1	...	...	...	...	3	...
27 ...	...	2	...	18	8	3	...	3	...	4	...	...	...	1
28 ...	1	...	...	5	6	7	...	2	...	...	...	...	1	...
29 ...	...	...	...	12	9	5	...	6	...	...	...	...	...	...
30 ...	...	10	...	9	5	...	...	...	...	...	...	1	2	...
31 ...	...	1	...	22	7	1	...	3	...	...	...	...	3	...
32 ...	...	3	3	16	4	6	...	1	...	4	...	...	1	...
33 ...	...	1	...	8	13	4	...	2	...	...	...	...	1	...
34 ...	...	...	...	10	3	6	...	2	...	...	...	1	3	...
35 ...	...	5	1	12	6	6	...	...	...	...	...	1	1	...
36 ...	...	...	...	7	2	8	...	...	...	11	...	...	...	...
37 ...	...	...	2	10	4	14	...	1	...	17	...	...	...	...
38 ...	...	5	...	4	4	5	...	...	...	...	...	...	...	...
39 ...	...	...	...	7	6	3	...	...	...	5	...	...	1	...
40 ...	...	5	...	12	3	7	...	...	...	...	...	...	4	...
41 ...	...	1	1	2	...	5	...	1	...	...	...	...	1	...
42 ...	...	4	...	3	5	...	...	...	...	...	1	...	...	...
43 ...	1	1	...	5	4	10	...	1	...	1	1	...	...	...
44 ...	...	...	...	8	1	4	...	...	...	...	...	...	2	...
45 ...	...	4	1	12	2	6	...	...	1	1	...	...	1	...
46 ...	...	...	1	10	5	4	...	1	...	...	...	...	1	...
47 ...	...	5	...	12	6	3	...	1	...	15	...	...	1	...
48 ...	...	1	...	11	4	7	4	...	...	...	...	...	1	...
49 ...	...	2	...	8	1	...	...	...	...	...	...	...	...	...
49 ...	...	...	2	8	6	2	...	...	...	1	...	...	3	...
51 ...	...	...	...	1	1	3	...	...	...	...	...	...	...	...
52 ...	...	...	3	8	1	...	...	1	...	...	1	...	1	...
	3	63	25	528	290	225	5	99	1	70	6	5	120	1



AGE AND SEX DISTRIBUTION OF CASES OF PULMONARY TUBERCULOSIS NOTIFIED TO THE DEPARTMENT OF PUBLIC HEALTH FOR EACH MONTH OF THE YEAR ENDED 31ST DECEMBER, 1944.

Month		Ages in Years.																					
		1-0.		1-2.		2-3.		3-4.		4-5.		5-6.		6-7.		7-8.		8-9.		9-10.		10-14.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
January	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
February	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
March	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
April	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
May	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
June	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
July	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
August	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
September	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
October	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
November	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
December	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...

Month.		Ages in Years—continued.																				
		15-19.		20-24.		25-29.		30-34.		35-39.		40-44.		45-49.		50 and over.		Ages not notified.		M.	F.	Total.
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.			
January	...	...	...	2	...	...	2	...	1	...	1	3	1	...	1	2	1	...	...	7	7	14
February	...	...	...	...	...	...	2	1	...	...	...	...	1	1	2	4	...	2	...	6	5	11
March	...	...	1	3	2	...	4	...	...	...	4	3	1	...	2	2	2	...	...	10	16	26
April	...	...	2	...	2	1	1	...	...	...	...	2	...	1	...	4	...	...	...	9	5	14
May	...	1	...	2	1	1	1	...	1	2	1	1	1	...	1	2	2	...	...	9	8	17
June	...	...	...	...	1	1	...	...	...	2	1	6	...	...	...	2	1	...	...	11	3	14
July	...	1	...	...	...	...	1	...	...	2	...	2	...	...	1	6	1	...	...	11	3	14
August	...	...	2	1	1	2	...	1	...	3	3	2	...	...	1	5	1	...	...	15	8	23
September	...	...	...	1	...	3	...	2	1	6	3	...	...	1	2	12	...	...	...	26	6	32
October	...	...	1	4	3	2	1	...	2	1	1	1	...	...	...	7	1	...	...	15	9	24
November	...	...	1	1	1	...	1	1	1	1	1	1	4	...	1	7	1	...	...	11	11	22
December	...	...	...	2	...	...	...	1	...	...	1	1	...	...	...	2	...	...	...	6	1	7
Totals	...	2	7	16	11	10	13	6	6	17	16	22	8	3	11	55	10	2	...	136	82	218

TABLE SHOWING THE INCIDENCE IN VARIOUS DISTRICTS OF EACH TYPE OF INFECTIOUS DISEASE FOR THE YEAR ENDED 31st DECEMBER, 1944.

District.	Undulant Fever.				Malaria.				Typhoid.				Diphtheria.				Scarlet Fever.				Pulmonary Tuberculosis.				Other Tuberculosis.			
	1.	2.	3.	4.	1.	2.	3.	4.	1.	2.	3.	4.	1.	2.	3.	4.	1.	2.	3.	4.	1.	2.	3.	4.	1.	2.	3.	4.
Albany	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Armadale	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Balingup	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bassendean	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bayswater	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Belmont	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Black Range	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Boulder	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Boyup Brook	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bridgetown	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Beverley	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Brookton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bruce Rock	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bunbury	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Busselton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Canning	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Carnamah	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Claremont	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chittering	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Collie	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Corrigin	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cottesloe	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cuballing	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cunderdin	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cue	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dalwallinu	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Darling Range	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Denmark	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Derby	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Donnybrook	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dowerin	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dumbleyung	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dwellingup	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Fremantle	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Fremantle, East	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Fremantle, North	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Geraldton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Gnowangerup	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Goomalling	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Gosnells	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Greenbushes	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Guildford	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hall's Creek	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Harvey	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Jarrahdale	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kalgoorlie	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Katanning	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kellerberrin	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kojonup	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kondinin	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Koorda	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..





TABLE SHOWING THE INCIDENCE IN VARIOUS DISTRICTS OF EACH TYPE OF INFECTIOUS DISEASE FOR THE YEAR ENDED 31<sup>ST</sup> DECEMBER, 1944—*continued*.

[illegible]





NOTIFICATIONS OF EACH TYPE OF INFECTIOUS DISEASE RECEIVED BY THE DEPARTMENT OF PUBLIC HEALTH FOR EACH WEEK OF THE YEAR ENDED 31st DECEMBER, 1945.

Week.	Undulant Fever.	Malaria.	Typhoid.	Diphtheria.	Scarlet Fever.	Pulmonary Tuberculosis	Other Tuberculosis	Brill's Disease.	Puerperal Fever.	Leprosy.	Dysentery.	Infantile Paralysis	Cerebro Spinal Meningitis	Lethargic Encephalitis
1 ...	...	5	3	7	3	2	...	...	...	...	1	...	...	...
2 ...	...	...	...	12	1	1	...	...	...	...	1	...	1	...
3 ...	...	...	1	9	1	5	...	2	...	2	1	...	2	...
4 ...	...	2	2	11	3	8	1	6	...	...	...	...	...	...
5 ...	...	...	1	10	1	2	...	1	...	...	...	1	...	...
6 ...	...	2	...	5	1	11	...	2	...	...	1	...	1	...
7 ...	...	...	3	14	2	7	1	3	...	...	1	...	...	...
8 ...	...	1	...	9	8	6	...	1	...	...	...	...	...	...
9 ...	...	...	...	9	2	10	...	1	...	...	...	...	2	...
10 ...	...	...	2	3	2	1	...	3	...	2	...	...	...	...
11 ...	...	...	...	8	...	4	...	...	...	4	...	...	...	...
12 ...	...	...	1	4	...	6	2	3	...	...	1	...	...	...
13 ...	...	...	...	2	5	7	...	1	...	...	...	...	1	...
14 ...	...	1	1	7	3	4	...	1	...	...	...	...	...	...
15 ...	...	...	1	5	3	3	...	3	...	...	1	...	...	...
16 ...	...	...	...	4	1	1	...	...	...	...	...	...	...	...
17 ...	...	1	...	6	1	4	...	3	...	...	...	...	...	...
18 ...	...	...	1	8	1	10	...	...	...	...	...	...	...	...
19 ...	...	...	...	10	...	5	...	1	...	...	1	...	...	...
20 ...	...	...	...	14	3	7	...	3	...	...	...	...	1	...
21 ...	...	...	...	9	5	6	...	2	...	...	...	...	1	...
22 ...	...	...	1	5	5	6	...	3	...	...	...	...	...	...
23 ...	...	...	...	5	2	8	1	1	...	...	...	1	1	...
24 ...	...	...	1	7	3	5	...	...	...	...	2	...	1	...
25 ...	1	...	...	7	3	2	...	2	...	...	...	...	...	...
26 ...	...	...	...	10	1	8	...	1	1	...	...	...	...	...
27 ...	...	1	1	14	3	1	...	...	...	1	...	...	...	...
28 ...	...	...	...	4	2	4	...	1	...	...	...	...	...	...
29 ...	...	1	...	5	3	7	...	2	...	...	...	1	1	...
30 ...	...	...	...	10	4	4	1	2	...	...	...	...	1	...
31 ...	...	...	...	7	1	6	...	1	...	...	...	1	2	...
32 ...	...	...	1	10	3	3	...	1	...	1	...	...	1	...
33 ...	...	...	...	4	1	4	...	2	...	...	...	...	2	...
34 ...	1	...	...	11	...	2	...	...	...	...	...	...	5	...
35 ...	...	2	...	11	...	7	...	...	...	...	...	...	...	...
36 ...	...	...	...	5	1	5	...	1	...	...	...	...	...	...
37 ...	2	...	1	10	1	2	2	4	...	...	...	...	...	...
38 ...	...	...	...	4	1	6	2	1	...	...	...	...	...	...
39 ...	...	...	...	6	1	8	...	...	...	...	...	...	...	...
40 ...	1	2	...	13	2	4	...	3	...	2	2	...	2	...
41 ...	...	...	...	7	1	4	1	...	...	...	...	2	...	...
42 ...	...	...	...	13	...	12	1	...	...	...	1	...	...	...
43 ...	...	2	...	3	2	6	...	3	...	...	...	...	1	...
44 ...	...	...	...	10	...	6	1	7	...	9	3	...	...	...
45 ...	...	...	...	11	3	2	2	...	...	...	...	...	2	...
46 ...	...	...	...	4	...	5	...	...	1	...	...	...	...	1
47 ...	...	1	...	7	3	5	...	...	1	10	1	...	...	...
48 ...	...	1	1	12	2	1	...	1	...	...	...	...	...	...
49 ...	...	1	...	15	2	12	...	1	...	...	...	...	...	...
50 ...	...	...	...	16	...	11	1	...	...	...	...	...	...	...
51 } 52 }	...	...	2	19	3	5	...	4	...	...	...	...	1	...
	5	23	24	425	99	271	16	77	3	31	17	6	29	1



AGE AND SEX DISTRIBUTION OF CASES OF PULMONARY TUBERCULOSIS NOTIFIED TO THE DEPARTMENT OF PUBLIC HEALTH FOR EACH MONTH OF THE YEAR ENDED 31st DECEMBER, 1945.

Month.		Ages in Years.																					
		0-1.		1-2.		2-3.		3-4.		4-5.		5-6.		6-7.		7-8.		8-9.		9-10.		10-14.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		
January	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
February	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
March	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
April	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
May	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
June	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
July	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
August	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
September	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
October	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
November	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
December	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	
Totals	...	1	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	

Month.		Ages in Years—continued.																				
		15-19.		20-24.		25-29.		30-34.		35-39.		40-44.		45-49.		50 and over.		Age not notified.		M.	F.	Total.
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.			
January	...	1	...	1	...	...	...	1	...	...	...	3	...	...	...	...	...	...	...	8	1	14
February	...	...	...	1	...	2	1	5	...	1	...	3	2	5	...	11	3	...	...	27	6	33
March	...	1	1	5	1	2	1	...	2	2	2	...	...	2	...	3	1	...	...	15	8	23
April	...	...	...	...	1	2	2	...	1	1	1	1	...	3	1	4	1	...	...	11	7	18
May	...	...	...	4	1	4	1	...	3	...	3	2	...	3	1	5	...	...	2	18	9	27
June	...	1	2	1	2	2	1	1	...	3	1	5	...	1	...	3	1	...	...	17	7	24
July	...	...	...	...	...	2	1	3	1	2	...	1	1	2	...	2	3	1	...	13	6	19
August	...	...	1	...	...	2	1	2	1	...	...	1	...	1	...	4	...	...	2	11	5	16
September	...	...	...	1	1	2	1	4	...	1	2	...	2	...	...	2	3	1	1	11	10	21
October	...	...	...	1	2	6	1	1	1	3	...	6	1	2	...	8	1	...	...	27	6	33
November	...	...	1	...	...	1	...	4	1	2	...	1	...	...	...	5	2	2	1	16	5	21
December	...	...	1	3	2	5	...	6	1	2	...	3	1	1	...	3	...	...	...	24	5	29
Totals	...	3	6	17	10	30	10	27	11	17	9	26	7	20	2	50	15	4	6	196	75	271

TABLE SHOWING THE INCIDENCE IN VARIOUS DISTRICTS OF EACH TYPE OF INFECTIOUS DISEASE FOR THE YEAR ENDED 31st DECEMBER, 1945.

[illegible]





TABLE SHOWING THE INCIDENCE IN VARIOUS DISTRICTS OF EACH TYPE OF INFECTIOUS DISEASE FOR THE YEAR ENDED 31st DECEMBER, 1945—continued.

[illegible]



TABLE SHOWING THE INCIDENCE IN VARIOUS DISTRICTS OF EACH TYPE OF INFECTIOUS DISEASE FOR THE YEAR ENDED 31st DECEMBER, 1945.—continued.

District.	Brill's Disease.				Puerperal Fever.				Leprosy.				Dysentery.				Infantile Paralysis.				Cerebro Spinal Meningitis.				Lethargic Encephalitis.			
	1.	2.	3.	4.	1.	2.	3.	4.	1.	2.	3.	4.	1.	2.	3.	4.	1.	2.	3.	4.	1.	2.	3.	4.	1.	2.	3.	4.
Lake Grace ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Leonora ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Manjimup ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Margaret River ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Meckering ...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Melville ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Meekatharra ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Menzies ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Merredin ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mingenew ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Midland Junction ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Moora ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Morawa ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mosman Park ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mt. Barker ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mt. Magnet ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mullewa ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mundaring ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nannup ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Narembeen ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Narrogin ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nedlands ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Norseman ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Northam ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Northampton ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Onslow ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Peppermint Grove ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Perth ...	11	9	6	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Perth Road Board ...	...	2	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Perenjori ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pingelly ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pinjarra ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Quairading ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rockingham ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Shark Bay ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
South Perth ...	1	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Southern Cross ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Subiaco ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Swan ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tambellup ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Three Springs ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Toodyay ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Upper Chapman ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Victoria Plains ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wagin ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wanneroo ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Westonia ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wickepin ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Williams ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wiluna ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wongan Hills ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wyalkatchem ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Yalgoo ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Yarloop ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
York ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Youanmi ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Services ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...





